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SOME TRENDS IN OTOLARYNGOLOGY

Chairman's Address

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Canfield[1] stated, "In the years 1935-1940, otolaryngology stood a bit eclipsed by the advent of chemotherapy, the general lack of basic scientific work in the specialty, and the general improvement in the control of infectious diseases which so often found access to the body through the cavities of the head."

Mosher,[2] Richards,[3] Furstenberg[4] and others have emphasized the need for training of otolaryngologists for treatment of parts of the body contiguous with those which now concern them. Many others are also deeply concerned with the limitations of this specialty from various causes. I agree with Richards, "that many changes are taking place in the field of otolaryngology which are becoming of increasingly vital concern to every practitioner of this specialty." This has been especially true since World War II. During the last war the General Surgery Branch was given the responsibility for otolaryngology. This may now be changed; as I understand it, there is to be a physician on the staff of the Secretary of Defense. This person is to be the policy director for the medical services for the Armed Services, and perhaps from now on the situation in regard to otolaryngology may be somewhat better.

Laryngology originally was an offshoot of medicine rather than surgery. Now many surgeons desire this specialty to be under the jurisdiction of surgery. This trend has increased in the past few years. In my opinion services with dual control seldom reach their maximum of efficiency. Specialists in laryngology, otology and rhinology must combat this movement by being adequately qualified and prepared to perform operations on organs contiguous with those which they now treat. Much, therefore, depends on the development of these qualifications by specialists in this field.

Many have believed that otolaryngology has suffered from encroachments, modifications and erosions and by directives from numerous sources. Perhaps it is because the otolaryngologists have permitted this. There can be no doubt that more tonsillectomies are being performed every day by general surgeons, physicians, pediatricians and even obstetricians than by otolaryngologists, and performed, as Richards says, "however skillfully or otherwise."

There are, then, the roentgenologist, plastic surgeon, faciomaxillary surgeon and psychiatrist all taking their share.

Bronchoscopy, a long recognized part of otolaryngology, is being gradually taken over by thoracic surgeons and even those in general medical practice. It is also a fact that a clinical laboratory in one of the large cities is performing endoscopic work. Here again the fault may be that of the otolaryngologists, all of whom did not include bronchoscopy in their preparation for the specialty; in some instances this failure was due to lack of interest or lack of opportunity to do this type of work. Otolaryngologists are better suited for this work because they are trained in working in small fields and have developed monocular vision. Endoscopy is a field in which the thoracic surgeon and the bronchoscopist should work together as a team. The bronchoscopist should be thoroughly prepared by surgical training to treat periesophageal infections, perforations of the cervical esophagus and mediastinal emphysema, all of which may be complications of esophagoscopy and bronchoscopy.

There can be no doubt that chemotherapy has played a definite part in all surgical practice. Whether this is permanent or transitory, time alone will tell. This generation may become so completely sensitized to the drugs that even the bacteria may revolt.

You know, or perhaps some of you do not know, that the pioneers of this specialty were primarily interested in performing general surgical operations while waiting for an opportunity to practice; because of circumstances they later became interested in otolaryngology. The Chairs of bygone days were Nose, Throat and Chest. That heritage of the pioneers must be preserved. The field of otolaryngology is shrinking, and changes are inevitable if one sits idly by and lets them come to pass. This trend cannot altogether be blamed on the surgeons; otolaryngologists must be willing to take some of the responsibility themselves. Perhaps some of this tendency stems from the fact that not too much effort has been made to train men in surgical principles. There is nothing so injurious as the "status quo." The otolaryngologist of the future must be thoroughly trained in the principles not only of surgery but also of protein replacements and metabolism, fluid balance, treatment of shock, blood volume, preoperative and postoperative measures, systemic complicating factors, organic disease and physiologic considerations of

Read before the Section on Laryngology, Otology and Rhinology at the Ninety-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 9, 1949.

1. Canfield, N.: The Present Status of Otolaryngology in the United States Army, Laryngoscope **56**: 693-700 (Nov.) 1946.
2. Mosher, H. P.: Read before the American Laryngological Association, 1921.
3. Richards, L. G.: Presidential Address, American Laryngological, Rhinological and Otological Society, 1948.
4. Furstenberg, A. C.: Read before the Southern Section American Laryngological, Rhinological and Otological Society, 1947.

thoracic surgery. He should also be familiar with thyroid surgery and metabolism, and surgery of neoplasms of the head, neck and salivary glands.

This specialty should be a major one and not secondary—not a subsidiary in the department of surgery. Perhaps otolaryngology should be reclassified to: Department of Head and Neck. This would mean that the future otolaryngologist would expand the present field of the specialty anatomically and by surgical training to include the entire head and neck, including the thyroid gland. There might be some opposition to this from the surgeons. However, papers on thyroid disease and surgery of the thyroid are on record by laryngologists in the *Transactions of the American Laryngological Association* by Mackenty, Rogers, Jarvis, Ingals, Watson, Cohen, Theisen, Barnhill and others.

Not to question the skill of the surgeon, I venture to say that operative procedures pertaining to the head and neck can be dealt with more skilfully from a technical point of view by the otolaryngologist, properly trained, than by the general surgeon. His training in delicate technics and his knowledge of the anatomy of these parts makes him well prepared to deal with conditions affecting the head and neck. With 18 per cent of all malignant growths in the body above the clavicle, the otolaryngologist should be qualified to perform surgical procedures in that field by reason of being more familiar with the area. The otolaryngologist should be doing this major surgical work, including the malignant growths, diverticulums of the cervical esophagus, resections of the neck, facial-maxillary surgery and thyroidectomies. Certainly if parts behind the thyroid are removed surgically, the latter operation should be readily accomplished. However, the preoperative and postoperative care of patients with thyroid conditions is extremely important, and team work with the metabolic service is needed.

The future, a glowing one, lies before the otolaryngologists if they prepare themselves as mentioned. If not, the field will become more and more restricted. Let us break the bonds of narrow satisfaction and courageously attack our responsibilities with foresight, to become broader medical men and better surgeons.

224 Delavan Avenue.

Pancreatic Cysts.—Even to the surgeon the diagnosis of pancreatic cyst presents difficulties as there is nothing pathognomonic about the clinical picture. The symptoms are any combination of the following: abdominal distress varying from vague discomfort to acute pain usually in the epigastrium; anorexia, nausea, vomiting, diarrhea; fever and leukocytosis; and in 61 per cent a palpable mass usually at or above the level of the umbilicus (Brunschwig; Judd, Mattson and Mahorner; Schulte and Emmett). Any one or all of these signs and symptoms may be produced by any of the upper abdominal organs and even by disease above the diaphragm. Diagnosis is further confused by the fact that associated disease of the gallbladder or bile ducts is present in 34 per cent of all cases (Judd, Mattson and Mahorner) not only as an etiological factor in some, but producing symptoms that can also be caused by the cyst. Many of the cysts follow prior attacks of pancreatitis; a certain number occur as the end result of pancreatic hemorrhage due to abdominal trauma and some have been attributed to obstruction of the ampulla of Vater. Therefore, the antecedent history is of considerable importance. In some cases the presence of hypoglycemia is suggestive of the true nature of the illness. —Eric P. Stone, Cushing Veterans Administration Hospital, Framingham, Mass., *The Journal of Urology*, August 1949.

ENDOCRINE SUBSTANCES IN THE TREATMENT OF CANCERS

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The efforts of research toward elucidation of the action of endocrine substances on cells have led to some control of cancers of the hormonal target-organs by medical treatment. Evidently, research is the backbone of the development of medicine. The controlling measures and the key observations on which they are based are the subjects of this paper.

No general nonspecific medication against cancer has been developed as yet, but advances have been made in the medicinal treatment of some rather unrelated tumors in far advanced and disseminated stages. The greatest progress in the chemotherapy of cancer in man has concerned neoplasms of the blood-forming tissues, the thyroid, the breast and the prostate. In 1939 Lawrence and his co-workers [1] demonstrated the beneficial effects of radioactive phosphorus in the treatment of leukemia, and in 1941 the use of nonradioactive medicines in the chemotherapy of carcinoma was introduced from this clinic. Subsequently a number of chemical substances, many unfortunately with considerable toxicity, have been found to benefit patients with neoplasms of the hemopoietic organs. Wide experience by numerous workers has confirmed the demonstration that the sex hormones are able to cause some regression of prostatic and mammary carcinomas. Progress has also been made in the treatment of cancer of the thyroid gland through the use of radioactive iodine.[2] These experiences indicate that the outlook for further control of medicines of other carcinomas is good.

As chemotherapeutic agents the sex hormones have a great advantage over all other medicines used in the treatment of cancer in that they are not toxic; and, if they do no good, at least they do no great or immediate harm to the patient with malignant disease.

CANCER OF THE PROSTATE

Cancer of the prostate occurs predominantly in old men, the incidence following a frequency distribution curve [3] between the ages of 40 and 90 years and the apex being between the ages of 60 and 70 years. Most of the cancers (fig. 1) occur in the posterior lobe [4] of the prostate, a region uninvolved by benign tumors. To deny that cancer can arise in the anterior region of the prostate is to imply an immunity to malignant change in these cells, and present theory holds that any bodily tissue can become neoplastic under the proper

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1. Lawrence, J. H.; Scott, K. G., and Tuttle, L. W.: Studies on Leukemia with the Aid of Radioactive Phosphorus, Internat. Clin. **3**: 33, 1939.

2. Keston, A. S.; Ball, R. P.; Frantz, V. K., and Palmer, W. W.: Storage of Radioactive Iodine in a Metastasis from Thyroid Carcinoma, Science **95**: 362, 1942. Hamilton, J. G.: The Use of Radioactive Tracers in Biology and Medicine, Radiology **39**: 541, 1942.

3. Huggins, C., and Johnson, M. A.: Cancer of the Bladder and Prostate, J. A. M. A. **135**: 1146 (Dec. 27) 1947.

4. Geraghty, J. T., and Boyd, M. F.: cited by Lowsley, O. S.: The Development of the Human Prostate Gland with Reference to the Development of Other Structures at the Neck of the Urinary Bladder, Am. J. Anat. **13**: 299, 1912.

stimulus. However, the origin of prostatic cancer elsewhere than in the posterior lobe is unusual.

Evidence [5] has been presented that the human prostate consists of two functionally different areas, the anterior segment (pars anterior) and the posterior lobe (pars posterior); the administration of estrogen to men with noncancerous prostate glands evokes far greater regression in the anterior than in the posterior region. The occurrence of prostatic calculi, which is essentially a disease of the posterior lobe (fig. 2), substantiates this view concerning the duality of the prostate; although corpora amylacea and calculi can be found in small numbers in the anterior segment, they occur in much greater quantity in the posterior lobe. The functional and neoplastic differences between the posterior and anterior regions of the prostate are as striking as those between the stomach and duodenum.

The natural history of untreated cancer of the prostate has been described. In 485 cases [6] the average duration of life from the appearance of the first symptoms to death was 31 months, and two thirds of the patients in whom metastasis had occurred prior to examination were dead within nine months. In the series of Nesbit and Plumb,[7] the average survival from the time of diagnosis to death was 21.2 months, and the median duration (50 per cent point) was 12 months.

It has now been established that androgen is a component in prostatic neoplasms. The neoplasm has never been observed when castration had been done on the patient early in life, although later castration does not eliminate the disease. Fischman [8] has encountered an important case in this regard: histologically proved adenocarcinoma of the prostate with osseous metastases developed in a man aged 62, who had been castrated about thirty years earlier.

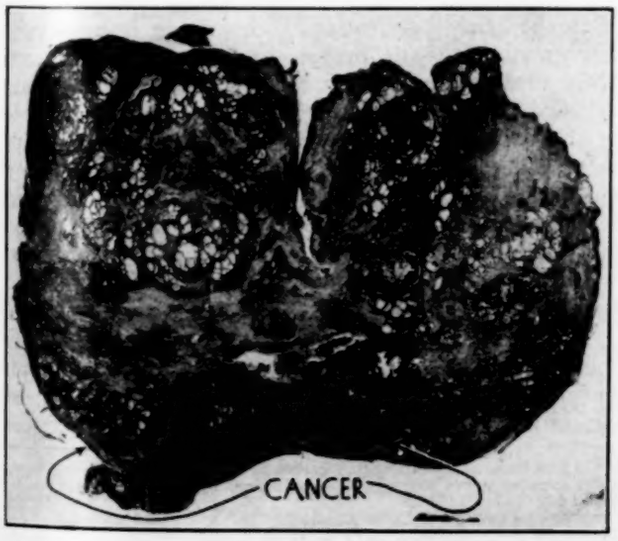

Fig. 1.—Photomicrograph of an equatorial section of a human prostate, showing the occurrence of early prostatic cancer in the posterior lobe and benign tumors in the anterior segment.

John Hunter knew that the prostate of castrated persons was small and inactive. White,[9] having observed the regression of uterine fibroids after oophorectomy, treated a series of patients who had benign prostatic enlargement by orchiectomy; many good results were reported, but this form of operative treatment fell into disuse, largely because of the contemporaneous development of the more acceptable operation of suprapubic prostatectomy.

Antiandrogenic therapy for prostatic cancer emerged from a study of benign neoplasms [10] of the prostate of the dog, the only creature apart from man in which these lesions develop. Both orchiectomy and estrogenic treatment caused prompt and decided regression of these tumors, and this therapy has since been adopted as standard veterinary practice.

Fig. 2.—Roentgenogram of an equatorial section of a human prostate, showing the accumulation of calculi in the posterior lobe, the region where cancer commonly develops.

Androgen greatly increases the growth of human prostatic cancer, while in favorable cases orchiectomy or estrogen therapy ameliorates the disease. This effect of endocrine substances was proved by studying the acid and alkaline phosphatases of the blood serum at close intervals; levels of these enzymes [11] are frequently increased in the blood when cancer of the prostate has metastasized.

Antiandrogenic measures effect an improvement in the disease in about 90 per cent of patients treated by excison of the testes or by administration of estrogens,[12] for example, 5 mg. diethylstilbestrol daily. If the lesion is confined to the prostate or nearly so, total prostatectomy by the perineal route is indicated; otherwise, for most patients, orchiectomy is advised as soon as the diagnosis of advanced cancer has been established. This minor operative procedure eliminates the testicular androgenic component and has yielded slightly better results than the estrogenic treatment.

Within two years in 55 per cent of the cases in the series the remission induced by antiandrogenic measures had ended and was followed by relapse; this corresponds to the experience of Nesbit and Cummings [13] in a larger series. Moreover, 75 per cent of the treated patients had died within five years. After eight to ten years, 4 of the 20 patients (20 per cent) in the first series [12] are alive and in good condition. In most instances the treatment merely provides palliation for short periods of time, but in a small number of patients, mostly those in the older age group, the improvement is extensive and prolonged.

5. Huggins, C., and Webster, W. O.: Duality of Human Prostate in Response to Estrogen, J. Urol. **59**: 258, 1948.
6. Bumpus, H. C., Jr.: Carcinoma of the Prostate, Surg., Gynec. & Obst. **43**: 150, 1926.
7. Nesbit, R. M., and Plumb, R. T.: Prostatic Carcinoma, Surgery **20**: 263, 1946.
8. Fischman, J. L.: Personal communication to the author.
9. White, J. W.: The Present Position of the Surgery of the Hypertrophied Prostate, Ann. Surg. **18**: 152, 1893.
10. Huggins, C., and Clark, P. J.: Quantitative Studies of Prostatic Secretion: II. The Effect of Castration and of Estrogen Injection on the Normal and the Hyperplastic Prostate Gland of Dogs, J. Exper. Med. **72**: 747, 1940.
11. Huggins, C., and Hodges, C. V.: Studies on Prostatic Cancer: I. The Effect of Castration, of Estrogen and of Androgen Injection on Serum Phosphatases in Metastatic Carcinoma of the Prostate, Cancer Research **1**: 293, 1941.
12. Huggins, C.; Stevens, R. E., and Hodges, C. V.: Studies on Prostatic Cancer: II. The Effects of Castration on Advanced Carcinoma of the Prostate Gland, Arch. Surg. **43**: 209 (Aug.) 1941. Huggins and Hodges.[11]
13. Nesbit, R. M., and Cummings, R. H.: Prostatic Carcinoma Treated by Orchiectomy, J. A. M. A. **124**: 80 (Jan. 8) 1944.

None of the measures available at present is of great value in the treatment of patients in relapse after antiandrogenic therapy. Frequently irradiation of the sacral region will relieve sciatica. Often the supplemental administration of diethylstilbestrol after orchiectomy will inhibit the tumor slightly. Doses of 5 to 10 mg. of this drug daily have been more effective than larger doses, such as 50 to 100 mg. daily.

The side effects of orchiectomy are hot flushes; these episodes can usually be abolished by the administration of diethylstilbestrol, 1 mg. daily for two weeks. With both orchiectomy and estrogenic treatment sexual impotence is the rule, although there are exceptions.

The administration of estrogen in effective amounts causes testicular atrophy and mammary hypertrophy. Growth of the breasts can be so extensive that lactation may be induced, as illustrated in the following case.

W. N., aged 64, had carcinoma of the prostate with osseous metastases, for which he was treated by a permanent suprapubic cystotomy in 1941. Diethylstilbestrol, 20 mg. daily, was given orally for two years beginning September 1942. In September 1944, 25 mg. (500 international units) of prolactin [14] was injected daily for five days, and at the end of this time creamy milk could be expressed from both breasts. Orchiectomy and removal of the cystostomy tube were carried out September 6, when administration of estrogen was discontinued; both incisions healed promptly. Since then the patient has been clinically well but has continued to lactate, a large drop of milk being easily expressed from each breast at frequent intervals.

The mammary stimulation by estrogen may be so great that the breasts sometimes undergo malignant change,[15] in most instances bilateral. In these cases the carcinostatic effects of estrogen on the prostate have been carcinogenic with respect to the breast. The induction of mammary cancer in women by estrogen therapy is believed to be extremely uncommon; clearly men are more vulnerable than women in this regard.

MAMMARY CANCER

Although androgen and estrogen are the only endocrine substances known to act on the prostate, growth of the breast is stimulated in addition by progesterone and by pituitary hormones, certainly prolactin and possibly mammotropin; the breast, therefore, is a more complex structure than the prostate and is acted on by a larger number of variables. For the same reasons, the physiology of the mammary gland is less well understood than is that of the prostate, and the treatment of cancer of the breast has been more empiric and hence less efficient.

Lathrop and Loeb [16] showed that in strains of mice with a high incidence of cancer the rate of mammary cancer could be reduced to close to zero when the ovaries were removed during early sexual maturity. When the mice were spayed at 5 to 6 months of age the incidence of cancer was lowered but not to such an extent as in earlier castration, but in mice with oophorectomy at 10 months the tumor incidence was the same as in unoperated litter mates, or nearly 100 per cent. Lacassagne [17] succeeded in producing mammary cancer in male mice of high-tumor strains by giving them injections of estrogen for long periods. Nathanson and Andervont [18] administered androgen to mice of the C_3H strain, and the incidence of mammary cancer in the untreated controls was 100 per cent; mammary cancer developed in only 30 per cent of the mice that had been given injections. Androgen had no effect on established tumors of this strain. Herrell [19] found that the incidence of mammary cancer was 10 times greater in normal women than in women who had undergone oophorectomy, the time of castration being a factor here as it was in Loeb's experiments on mice.

CANCER OF THE MALE BREAST

Cancer of the male breast [20] comprises about 1 per cent of all cancer of the breast, and both the pathologic and clinical course approximate that in the female. The effects of hormonal modification by orchiectomy are often impressive.

Farrow and Adair [21] reported that androgen stimulated the growth of the tumor, but in 1 case orchiectomy caused some regression. In a series of 6 patients [22] castration caused regression of the tumor and its metastases in 3; the relief of pain and the clinical improvement in some cases was dramatic. Subsequently it was reported [23] that 2 of these 6 men who had extensive mammary cancer were alive and without evidence of disease more than five years after orchiectomy. Treves [23] commented that the clinical regression in inoperable carcinoma of the male breast after orchiectomy was analogous to the regression of similar lesions in prostatic cancer.

CANCER OF THE FEMALE BREAST

Oophorectomy.—Beatson [24] described improvement after removal of the ovaries in 2 of 3 young women with advanced mammary cancer. He stated, "I am satisfied that in the ovary of the female and the testicle of the male we have organs that send out influences more subtle, it may be, and more mysterious than those emanating from the nervous system." Lett [25] collected 99 cases in which oophorectomy had been performed and found improvement in 23 per cent; if he excluded women over 50 years of age the figure rose to 41 per cent.

Largely because of convenience, oophorectomy was then replaced by irradiation of the pelvis, but with inferior results. Ahlbom [26] found that in advanced cancer treated solely by pelvic irradiation the treatment

14. Dr. Edward Henderson of Schering Corporation provided this drug.

15. Darget, R.: Epithélioma bilatéral de la glande mammaire a la suite de l'emploi prolonge d'un œstrogène de synthèse dans le traitement d'un cancer prostatique, Bull. et mém. A. franç. d'urol. 1946. Abramson, W., and Warshawsky, H.: Cancer of the Breast in the Male Secondary to Estrogenic Administration: Report of a Case, J. Urol. **59:** 76, 1948. Von Reimann-Hunziker, G.: Brustdrüsenkarzinom nach Ovocyclinbehandlung eines Prostatakarzinoms, Acta helvet. Chir. **15:** 242, 1948.

16. Lathrop, A. E. C., and Loeb, L.: Further Investigation on the Origin of Tumors in Mice, J. Cancer Research **1:** 1, 1916. Loeb, L.: The Significance of Hormones in the Treatment of Cancer, J. Nat. Cancer Inst. **1:** 169, 1940.

17. Lacassagne, A.: Apparition de cancers de la mamelle chez la souris mâle, soumise à des injections de folliculine, Compt. rend. Acad. d. sc. **195:** 630, 1932.

18. Nathanson, I. T., and Andervont, H. B.: Effect of Testosterone Propionate on Development and Growth of Mammary Carcinoma in Female Mice, Proc. Soc. Exper. Biol. & Med. **40:** 421, 1939.

19. Herrell, W. E.: The Relative Incidence of Oophorectomy in Women With and Without Carcinoma of the Breast, Am. J. Cancer **29:** 659, 1937.

20. Harnett, W. L.: A Statistical Report on 2,529 Cases of Cancer of the Breast, Brit. J. Cancer **2:** 212, 1948.

21. Farrow, J. H., and Adair, F. E.: Effect of Orchidectomy on Skeletal Metastases from Cancer of the Male Breast, Science **95:** 654, 1942.

22. Treves, N.; Abels, J. C.; Woodard, H. Q., and Farrow, J. H.: The Effects of Orchiectomy on Primary and Metastatic Carcinoma of the Breast, Surg., Gynec. & Obst. **79:** 589, 1944.

23. Treves, N.: Castration as a Therapeutic Measure in Cancer of the Male Breast, Cancer **2:** 191, 1949.

24. Beatson, G. T.: On the Treatment of Inoperable Cases of Carcinoma of the Mamma: Suggestions for a New Method of Treatment with Illustrative Cases, Lancet **2:** 104 and 162, 1896.

25. Lett, H.: An Anlysis of Ninety-Nine Cases of Inoperable Carcinoma of the Breast Treated by Oophorectomy, Lancet **1:** 227, 1905.

26. Ahlbom, H.: Castration by Roentgen Rays as an Auxiliary Treatment in the Radiotherapy of Cancer Mammae at Radiumhemmet, Stockholm, Acta radiol. **11:** 614, 1930.

had no favorable effect. G. W. Taylor [27] treated 50 patients, mostly those with advanced disease, by artificial menopause. Irradiation of the pelvis was followed by temporary improvement in about one third of the cases, the most striking benefit apparently occurring in cases with osseous metastasis.

Comment.—Oophorectomy has produced amelioration of the disease in many young women with advanced mammary cancer; the improvement is usually temporary but occasionally is prolonged. Studies of the cell structure of the tumors have not been helpful in predicting which patients will react favorably. Ovarian irradiation is less certain, more temporary and more capricious in its benefit than surgical excision of the ovaries.

Androgen.—Although improvement in a few cases [28] of advanced cancer of the female breast following androgen administration had been seen earlier, the chief impetus in establishing this method of treatment came from the Adair school. Farrow and Woodard [29] treated 33 patients with testosterone propionate for brief periods, and about half the patients experienced relief of pain; in 3 women there was a greatly increased serum calcium level. Adair and Herrman [30] treated 11 patients who had advanced cancer of the breast with large doses of testosterone propionate (about 2 to 4 Gm. in three months); 4 patients, 1 with involvement of the soft parts and 3 with osseous metastasis, showed remarkable improvement. S. G. Taylor III and co-workers [31] found that administration of testosterone propionate, 300 to 700 mg. each week, caused as its first effect relief of pain and sometimes regression of both the primary tumor and visceral metastases. There was improvement in 11 of 17 patients in the Taylor series of cases with osseous involvement; however, in 5 patients congestive heart failure developed. Masculinization (hirsutism) develops as a side effect of androgen therapy.

The Therapeutic Trials Committee of the American Medical Association (Council on Pharmacy and Chemistry) has recently reviewed [32] the data obtained from the treatment with testosterone propionate of 285 patients who had mammary cancer associated with metastasis. There was no appreciable difference in the response of patients in various age groups from 25 to 79 years. Approximately 62 per cent of these patients experienced subjective relief, while objective improvement was seen in lesions of the soft tissue and the bones in approximately 1 of 5 patients. No significant difference in response was observed by the use of doses between 150 to 300 mg. weekly.

Comment.—The ameliorating effect of androgen in both young and old patients is definite, but the mechanism of action is unknown; the best results apparently occur in patients with osseous metastasis. The effects at best are temporary; masculinization develops, and hypercalcemia and heart failure are frequently encountered. I have observed the optimal response to androgenic treatment following the daily intramuscular injection of 25 mg. of testosterone proprionate.

Estrogen.—Haddow and co-workers [33] demonstrated that estrogen administered to certain patients with advanced mammary cancer caused regression of the soft lesions and also the osseous involvement; there was temporary retardation or regression, often striking in nature, in 16 patients in a series of 40. Healing of carcinomatous ulcers, decrease in the size of involved lymph nodes as well as in the primary tumor and regression of hepatic and pulmonary metastasis were observed in about half the patients. These observations have been confirmed.[34] As a side effect uterine bleeding occurs often and nausea develops occasionally. S. G. Taylor III [31] expressed his belief that the oral administration of 3 mg. of diethylstilbestrol daily is an effective dose.

About 25 per cent of 144 patients treated by estrogen therapy for metastases from mammary cancer maintained subjective and objective improvement for nine months or longer.

Comment.—Clearly implicated as a causative agent in the mammary cancers of mice, estrogen has a temporary regressive effect in advanced mammary cancer in older women, although the mechanism of the inhibitory effect is unknown. In younger women growth of the tumor may be accelerated through its use. It is not known whether those patients who respond favorably to estrogenic treatment will also respond to the administration of androgen.

MISCELLANEOUS TUMORS

Some activity in inhibiting cancer of the bladder by antiandrogenic measures has been reported, but the use of these agents is empiric. Haddow and associates [33] treated 30 patients with advanced malignant disease other than cancer of the breast and prostate and found partial regression in only 1 case, which happened to be of carcinoma of the bladder. Shivers [35] treated 2 patients who had advanced infiltrative cancer of the base of the bladder by orchiectomy and reported definite alleviation of subjective symptoms and an equivocal regression in the growth of the tumor.

Comment.—It is important in evaluating the treatment of vesical neoplasm to rule out prostatic carcinoma where the beneficial results of antiandrogenic treatment have been demonstrated. I am of the opinion that estrogen has a slight but definite activity against cancer in a wide variety of diverse neoplasms, especially in older persons; in this clinic some temporary and partial amelioration has been observed in cancer of the stomach, bladder and colon, and in hypernephroma. The evidence of improvement in these miscellaneous tumors is clinical; to date the proof has not been rigorous or compelling.

27. Taylor, G. W.: Evaluation of Ovarian Sterilization for Breast Cancer, Surg., Gynec. & Obst. **68:** 452, 1939.

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29. Farrow, J. H., and Woodard, H. Q.: The Influence of Androgenic Substances on the Serum Calcium in Cases of Skeletal Metastases from Mammary Cancer, J. A. M. A. **118:** 339 (Jan. 31) 1942.

30. Adair, F. E., and Herrman, J. B.: The Use of Testosterone Propionate in the Treatment of Advanced Carcinoma of the Breast, Ann. Surg. **123:** 1023, 1946.

31. Taylor, S. G., III; Slaughter, D. P.; Smejkal, W.; Fowler, E. F., and Preston, F. W.: The Effect of Sex Hormones on Advanced Carcinoma of the Breast, Cancer **1:** 604, 1948.

32. Van Winkle, W., Jr. (Secretary, Therapeutics Trials Committee): Estrogens and Androgens in Mammary Cancer: A Progress Report, J. A. M. A. **140:** 1214 (Aug. 13) 1949.

33. Haddow, A.; Watkinson, J. M.; Paterson, E., and Koller, P. C.: Influence of Synthetic Oestrogens upon Advanced Malignant Disease; Brit. Med. J. **2:** 393, 1944.

34. Nathanson, I. T.: The Effect of Stilbestrol on Advanced Cancer of the Breast, Cancer Research **6:** 484, 1946. Taylor, Slaughter, Smejkal, Fowler and Preston.[31]

35. Shivers, C. H. DeT.: Bilateral Orchiectomy in Advanced or Recurring Carcinoma with Severe Subjective Symptoms: A Preliminary Report, J. Urol. **54:** 539, 1945.

CONCLUSION

Modification of the internal environment of the host by medication with substances occurring normally in the body or with synthetic compounds having physiologic activity similar to natural products is capable of effecting a long-continued regression of several widely disseminated carcinomatous processes in man.

MANAGEMENT OF PATIENTS WITH TETANUS

Some Clinical Experiences with Various Muscle-Relaxing Agents

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and
JOHN ADRIANI, M.D.
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It may be said that the basic treatment of tetanus is to prevent the extension of the disease and to neutralize the toxins already present. However, at the time the diagnosis of tetanus becomes apparent, certain dangerous and sometimes fatal symptoms are already established. Rigidity and spasm of muscle must be controlled in order to prevent death due to either exhaustion or respiratory failure.

In the past various agents, such as magnesium sulfate, the barbiturates, chloral hydrate and tribromoethanol (avertin®), have been used. In more recent years muscle-relaxing agents such as various preparations of curare and curare-like drugs have been tried.

In Charity Hospital at New Orleans the Anesthesia Department is consulted in cases of tetanus in reference to resuscitative measures and the use and administration of muscle-relaxing agents and sedative drugs such as tribromoethanol. From July 1, 1947 to the time of writing we have been consulted in regard to, or have treated for control of muscular spasm, 70 patients with tetanus. These patients ranged in age from 8 days to 93 years, and the tetanus was of various degrees of severity.

PROCAINE HYDROCHLORIDE

Because of recent interest in the intravenous use of procaine hydrochloride in various diseases in which spasm of muscle played a part, we became interested in its possible use in the treatment of tetanus.

It is believed that peripherally procaine affects the nerve endings, both sensory and motor, so that their action is diminished. This should produce vasodilatation and muscular relaxation and should also decrease reflex excitation from external stimuli. We know that intravenously given procaine acts centrally as a stimulant, and it was immediately apparent, in view of the hyperirritable character of these patients, that this central stimulation must be counteracted with some sedative in order that we might administer an amount of procaine hydrochloride sufficient to produce peripheral effects.

In general, our procedure was as follows: The patient was given phenobarbital either intramuscularly or orally in doses of 1 to 3 grains (0.06 to 0.19 Gm.). An infusion of 0.1 per cent solution of procaine hydrochloride in 5 per cent dextrose in distilled water was started intravenously at the rate of thirty drops per minute. The infusion was allowed to run at this rate for ten minutes, and then the rate was gradually increased until excitement or hyperirritability of the patient appeared or until the infusion ran uninhibited at a rate of one hundred and eighty drops per minute. A solution of thiopental sodium (pentothal sodium®), either 2½ per cent or less, was kept in readiness. When signs of toxicity or hyperirritability occurred, administration of the procaine was reduced in rate or stopped completely for a period of time. If the symptoms of toxicity did not disappear, thiopental sodium was administered intravenously in the amount necessary to control the restlessness and excitement of the patient. When it became necessary to administer thiopental sodium almost continuously, the infusion of procaine hydrochloride was discontinued. The amount of procaine hydrochloride given to various patients ranged from 100 mg. to 1 Gm., and the amount of thiopental sodium ranged from zero to 500 mg. The time required for treatment ranged from thirty minutes to two and one-half hours. This treatment was given on an average of once daily. Supplemental sedation with phenobarbital, amobarbital sodium (amytal sodium®) or tribromoethanol was given between these treatments. Some relaxation of muscle and diminution in sensitivity to stimulation was produced with this combination of intravenously given procaine and barbiturates. However, this effect was not long lasting and soon required supplemental sedation. When thiopental alone was given intravenously the effect wore off in an average of thirty minutes.

PROCAINE WITH OTHER AGENTS

It was noted that tribromoethanol in doses of 50 mg. per kilogram of body weight, given as supplemental sedation between treatments with procaine, produced muscular relaxation which in many instances lasted longer than that produced by the procaine-thiopental combination. It was then decided to use a combination of tribromoethanol and procaine. The patients were given 50 mg. per kilogram of body weight of tribromoethanol rectally, and approximately thirty minutes later the infusion of procaine hydrochloride was started. In general it was found that the patients tolerated larger amounts of procaine administered at a more rapid rate, and required a smaller amount of thiopental to counteract the symptoms of procaine toxicity. In many instances the sedation and muscular relaxation produced by this combination lasted twice as long as that produced by tribromoethanol alone.

Of the 25 patients treated with procaine and thiopental or procaine and tribromoethanol, 5 died. One patient died as the result of a mucous plug in the tracheotomy tube. Two deaths were due to pulmonary complications. Two patients died rather suddenly, probably because of respiratory obstruction. Both had copious secretions, and it was impossible to keep the airway completely free. It is noteworthy that in neither of these 2 cases had a tracheotomy been performed.

In all 25 cases we were able to control the rigidity and spasm of muscle with procaine and thiopental or procaine and tribromoethanol and supplemental sedation with phenobarbital and/or tribromoethanol.

In general we reached the following conclusions as to the intravenous use of procaine in relieving or controlling the rigidity and spasm of muscle in tetanus:

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Read in a Panel Discussion on Intravenous Procaine before the Section on Anesthesiology at the Ninety-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 8, 1949.

1. Procaine used alone is not effective, and its stimulating action on the central nervous system must be overcome with a depressant of the central nervous system.

2. The combination of procaine and tribromoethanol gives better results than the combination of procaine and thiopental.

3. Muscular relaxation and sedation produced by the combination of tribromoethanol and procaine lasts longer than that produced by tribromoethanol alone.

4. Respiratory depression is less when tribromoethanol and procaine are administered than when the former is administered alone.

5. The intravenous administration of procaine to these patients is not without hazard and requires constant attention and careful observation.

BARBITURATES

Since the intravenous administration of procaine in these cases is not without disadvantages and is not entirely satisfactory, we also tried other drugs or combinations of drugs. We have reviewed 22 cases of tetanus during this same period in which patients were treated with phenobarbital and amobarbital sodium. Many of these cases were mild. The muscular rigidity and spasm was not severe, and the patients required only mild sedation to control their restlessness. However, other cases proved severer than was originally thought, and 4 of the 7 deaths in this series of cases occurred as a result of sudden sustained tetanic spasm with respiratory arrest, in which attempts at artificial respiration were ineffective. The other 3 deaths occurred in paients with cardiac disease, 2 of whom were aged and were practically moribund when first seen.

We concluded that phenobarbital is a good sedative in these cases but is ineffective in controlling the muscular rigidity and spasm of even moderately severe tetanus. Amobarbital sodium given intravenously is effective in relieving an acute tetanic spasm but is not as effective as tribromoethanol or a combination of the last-mentioned agent and procaine in the general control of rigidity and spasm of muscle in tetanus.

TRIBROMOETHANOL

We have reviewed 10 cases of tetanus managed in this hospital in which tribromoethanol was used without the intravenous administration of procaine. In all these cases the patients received phenobarbital, but tribromoethanol was relied on for control of the muscular rigidity and spasm. A dose of 50 mg. of the drug per kilogram of body weight, administered rectally, was found to be effective. This was given as often as needed, the average interval being three to four hours in severe tetanus. Four deaths occurred in this series, only 1 of which was due to tetanic spasm. It was later found that this patient had not received tribromoethanol for ten hours prior to death. It was concluded that the drug is effective in controlling rigidity and spasm of muscle in tetanus. However, its administration is accompanied with varying degrees of respiratory depression in the patient. Also, rectal irritation occurred in about one third of the cases after repeated administration of the drug.

Three cases of tetanus were reviewed in which chloral hydrate was used as a sedative. In 2 of these cases the patients died with tetanic spasms. The third patient survived. Fairly severe respiratory depression accompanied the doses of chloral hydrate used in all these cases.

CURARE

From time to time various investigators have reported on the use of curare in the treatment of tetanus. In 1947 Adriani and Ochsner [1] reported 5 cases of tetanus treated in this hospital with *d*-tubocurarine chloride (intocostrin®). In general their results were unsatisfactory. They found that relief from spasm was not obtained until the dose which caused almost complete curarization was given; the response was fleeting, and respiratory depression and obstruction were avoided with difficulty. Recently there have appeared in the literature reports on the use of curare in oil in the treatment of tetanus with good results. We have used *d*-tubocurarine chloride in peanut oil with myricin in 2 cases in children. In this preparation each cubic centimeter contains 27 mg. of *d*-tubocurarine chloride pentahydrate, equivalent to 180 units of the drug, and 48 mg. of myricin suspended in peanut oil. In the first case 0.25 cc. was given initially. This did not control the spasms, and the next day 0.5 cc. was given intramuscularly. However, this dosage likewise failed to control the spasms. It was then considered advisable to change the treatment rather than to continue seeking an effective dose of curare in oil, and the patient was given tribromoethanol. The condition was severe, and the patient later died of respiratory complications.

The second patient was given 0.5 cc. of the curare preparation in oil initially, but this was not effective. The next day 1 cc. of the drug was given intramuscularly. This was effective for thirty-six hours. At this time a second injection of 1 cc. was given. Six hours later the patient had complete muscular paralysis except for ineffective diaphragmatic movements. She was placed in a respirator for one and one-half hours. At the end of this period she had resumed normal respiration. She recovered, receiving only one subsequent injection of 0.5 cc. of curare in oil.

From this small series we concluded that the results using this preparation were not always predictable and that treatment by this method had many of the disadvantages of curare therapy by the multiple dose method as well as the disadvantage of causing massive overdosage.

MEPHENESIN

Recently we have used a preparation of mephenesin (3-ortho-toloxy-1,2-propanediol) called tolserol.® This is a curare-like compound and has previously been used as a relaxing agent in anesthesia and in neurologic diseases characterized by muscle spasm or increased muscle tonus. It has been reported to give good abdominal relaxation without intercostal paralysis. We used this preparation in the form for oral administration, each tablet containing 250 mg. In all except the exceedingly mild cases we have a stomach tube in place for feeding. This provides an easy, nonirritating route for the administration of the drug. So far 8 patients with tetanus have been treated with this preparation. They ranged in age from 22 months to 68 years. Each received for sedation phenobarbital in doses ranging from ½ to 2 grains (0.03 to 0.13 Gm.) given once, twice or three times daily. Mephenesin was given in doses ranging from 62.5 to 750 mg. in children and up to 3,500 mg. in the 1 adult patient. This was given as often as every two hours in some

1. Adriani, J., and Ochsner, A.: Some Observations on the Use of Curare in the Treatment of Tetanus, Surgery **22**: 509, 1947.

cases, but the average interval was about four hours. On the whole this group of cases presented only moderately severe signs and symptoms of tetanus. However, the first case in which mephenesin was used was especially severe, and results with this drug proved unsatisfactory. The doses used either were ineffective or produced severe respiratory depression. Mephenesin was discontinued and treatment was continued with tribromoethanol. After a stormy course the patient recovered. This was the only case of severe tetanus in which this form of treatment was attempted; therefore we are unable to give an opinion as to its efficacy in this type of case. In all of the other 7 cases the control of muscular rigidity and spasm was satisfactory with phenobarbital and mephenesin. We did not attempt to keep these patients completely relaxed at all times. Profound sedation is undesirable because of respiratory depression and the difficulty in keeping the airway free of secretions. Phenobarbital or mephenesin, or both, were given as needed to control restlessness and spasm. All these patients had tracheotomy performed early in the course of the disease, and the 1 patient with extremely severe tetanus required insertion of a bronchoscope through the tracheotomy once to relieve atelectasis. All patients survived. Only 1 adult was treated with mephenesin, and he did not respond as well as did the children.

Hematuria and abdominal distention has been reported with the intravenous administration of this drug. We used the oral route of administration, and neither hematuria nor abdominal distention was observed in any instance. Allergic or toxic reactions to the drug were not observed.

CONCLUSIONS

From this group of cases our conclusions were as follows:

1. The combination of phenobarbital and tolserol* is exceedingly satisfactory in controlling the muscular rigidity and spasm in cases of moderately severe tetanus.

2. With this form of treatment, it is less difficult to keep the respiratory passages free of secretions. Pulmonary complications were observed in only 1 of these 8 cases.

From these 70 cases of tetanus which we have reviewed, certain general observations may be made:

1. Cases of tetanus vary widely in many respects. Therefore, true evaluation of results from various forms of therapy is extremely difficult.

2. All cases of tetanus require constant attendance and careful observation. The course of the disease may change abruptly at any moment.

3. In all cases of tetanus, except the mildest form in which the diagnosis is actually questionable, early tracheotomy should be performed. This eliminates the possibility of upper respiratory obstruction and facilitates the elimination of irritating and obstructing secretions from the lower respiratory passages. In many cases the amount of sedation required in these patients is decidedly reduced following tracheotomy.

4. The control of rigidity and spasm of muscle is essential. In this institution various agents have been used, and some have given better results than others. However, none of the agents proved entirely satisfactory, and all have certain disadvantages.

INTRAVENOUS USE OF PROCAINE IN THE MANAGEMENT OF ARTHRITIS

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Arthritis and rheumatic disorders are second on the list of the most commonly disabling afflictions.[1] Not only does arthritis produce economic hardship by reason of its disabling characteristic, but the multitude of unsatisfactory therapies with which the physician attempts to treat this condition often results in a feeling of helplessness and even hopelessness on the part of the patient.[2] Since to the patient relief of pain and spasm is of prime importance, to the physician the choice of a method of treatment which will produce satisfactory alleviation of pain is one of the first steps in the management of arthritis. It is the purpose of this report to present a method which has produced a sufficient number of satisfactory results in the relief of pain in arthritic conditions to warrant further application and investigation.

In several previous reports we have indicated the value of procaine hydrochloride administered intravenously for the control of pain in traumatic and inflammatory conditions.[3] Recently we supplemented and reevaluated our observations in arthritic conditions in an interim report.[4] During the past three years we have treated and observed 250 patients afflicted with arthritis, who received 1,894 infusions of procaine hydrochloride intravenously, with no mortality or morbidity.

THE PAIN SYNDROME

It is becoming increasingly apparent that the nature of the arthritic process is dependent to a certain extent on a neuroendocrine imbalance. This imbalance no doubt involves several factors of the neuroendocrine system rather than a single isolated dysfunction.[5]

Articular cartilage itself is insensitive. The pain is due to the secondary changes within the periarticular structures and capsule. Moore has shown experimentally that when a stimulating agent reaches the capillary bed in effective strength pain results.[6] Whether pain arises from the stimulation of sensory nerve endings in the intima of arteries or capillary endothelium [7] or from the stimulation of tissues adjoin-

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2. Wolff, E.: Trauma and Arthritis, Indust. Med. **17:** 41, 1948.
3. (*a*) Graubard, D. J.; Robertazzi, R. W., and Peterson, M. C.: Intravenous Procaine: A Preliminary Report, New York State J. Med. **47:** 2187 (Oct. 15) 1947. (*b*) Graubard, D. J., and Ritter, H. H.: Intravenous Procaine in the Treatment of Trauma, Am. J. Surg. **74:** 765 (Nov.) 1947. Graubard, D. J.; Kovacs, J., and Ritter, H. H.: The Management of Destructive Arthritis of the Hip by Means of Intravenous Procaine, Ann. Int. Med. **28:** 1106 (June) 1948. Graubard, D. J.; Robertazzi, R. W., and Peterson, M. C.: One Year's Experience with Intravenous Procaine, Anesth. & Analg. **27:** 222 (July-Aug.) 1948. Graubard, D. J.; Waldman, M. H., and Peterson, M. C.: Intravenous Procaine in the Management of the Injured Hand, New York State J. Med. **48:** 1693 (Aug. 1) 1948. Graubard, D. J., and Peterson, M. C.: The Therapeutic Uses of Intravenous Procaine, Anesthesiology **10:** 175 (March) 1949.
4. Graubard, D. J., and Peterson, M. C.: Intravenous Procaine in the Management of Arthritis (An Interim Report), Connecticut State M. J. **13:** 33 (Jan.) 1949.
5. Pemberton, R.: Developments in Arthritis, Am. J. M. Sc. **209:** 384 (March) 1945.
6. Moore, R. M.: Some Experimental Observations Relating to Visceral Pain, Surgery **3:** 534, 1938.
7. Krogh, A.: The Anatomy and Physiology of Capillaries, New Haven, Conn., Yale University Press, 1922; Stoehr, P.: Mikroskopische Beitrag zur Innervation der Blut Kapillaren beim Menschen, Ztschr. f. zellforsch. u. mikr. Anat. **3:** 431, 1926.

ing the capillary bed [6] is still a matter of controversy. It is generally agreed that the dysfunctioning capillary leads to local edema, hypoxia and hydrogen ion changes and that, when metabolites accumulate within the tissues, pain becomes noticeable or often unbearable. We believe that when procaine hydrochloride is administered intravenously it reaches the dysfunctioning capillary unit and, by anesthetizing the irritated nerve endings, breaks the reflex arc pattern, thus resulting in the return of normal circulation.[8]

The hyperactivity of the vasomotor apparatus in chronic arthritis is indicative of irreversible pathologic changes in the autonomic nervous system—specifically, the sympathetic ganglion.[9] Kuntz has shown histologically the changes produced,[10] but all these changes are primarily the result of excessive peripheral nervous stimulation; if the peripheral process is subdued, there may be a reversal of the degenerative process.

Another possible action of procaine to be considered is its apparent ability to inactivate cholinesterase, thus allowing for the more sustained action of acetylcholine in the maintenance of the humoral balance.[11] Although Brodie, Lief and Poet concluded that the hydrolysis of procaine is unusually rapid,[12] Glick expressed his belief that procaine is completely unattacked by the esterases [13] but does undergo a small degree of nonenzymatic hydrolysis.[14] Soehring has stated that procaine and its split product diethylaminoethanol provide a special form of sensibilization to epinephrine and acetylcholine.[15] Bergmann was of the opinion that procaine will inhibit adrenal secretion induced in the hypoglycemic state of hyperinsulinism.[16]

METHOD OF ADMINISTRATION

The action of any drug depends on dosage, ratio of absorption or distribution to the rate of destruction or excretion, the physical-chemical properties of the drug and the peculiar sensitivities of the particular patient.[17] Early in our investigations we concluded that the total amount of procaine hydrochloride to be given intravenously at any one time should not exceed 4 mg. per kilogram of body weight. Since procaine is split rapidly into para-aminobenzoic acid and diethylaminoethanol by procaine esterase [18] and since procaine or para-aminobenzoic acid cannot be detected in the blood stream twenty minutes after a rapid intravenous injection, we concluded that in order to maintain a satisfactory blood level the infusion should be given in twenty minutes. Therefore we proposed the "procaine unit": 4 mg. of procaine hydrochloride per kilogram of body weight to be administered in twenty minutes.[19] Clinical experience indicated that a 0.1 per cent (1 : 1,000) solution of procaine hydrochloride in isotonic sodium chloride solution would be tolerated by most patients. In hypertensive patients 5 per cent dextrose in water is substituted for the isotonic saline solution.

For example, a 70 Kg. patient would receive 280 mg. of procaine hydrochloride, or 280 cc. of a 0.1 per cent solution in isotonic sodium chloride solution in twenty minutes or 14 cc. per minute for twenty minutes. For better control and easier administration, in preference to the ordinary infusion apparatus, we use a rotameter,[19] an instrument which accurately measures the rate of flow of intravenous fluids.[20]

In the preparation of our solutions, we add 5 cc. of a 20 per cent solution of procaine hydrochloride [21] to a liter of diluent. Recently, we have used a prepared 0.1 per cent solution of procaine hydrochloride in isotonic sodium chloride solution with satisfactory results.[22] The use of the crystalline procaine hydrochloride should be avoided, for one can never be certain of the complete dissolution of the drug.

Premedication such as a barbiturate is not given to our patients. In over 4,000 infusions we have found no evidence of sensitivity to procaine or addiction to the drug. As stated previously, we have encountered no morbidity or mortality.

TABLE 1.—*Results of Treatment of 250 Patients with Intravenous Infusions of Procaine Hydrochloride Solution.*

	A Rheumatoid Arthritis	B Arthritis Due to Trauma	C Degenerative Diseases of the Joints
Number of cases	54	42	154
Number of infusions	526	175	1,193
Average number of infusions	9.8	4.2	7.1
Results			
Good	39	40	120
Fair	9	1	20
Poor	6	1	14
Increased Mobility			
Positive	42	41	128
Negative	12	1	26

In this form of therapy, the sole guide to the number and frequency of infusions to be given is the degree or recurrence of pain. Some patients were treated daily and others weekly, or on the return of pain. Procaine therapy by the intravenous route seems to have a cumulative effect. However, the general condition of the patient must also be considered in determining the frequency of infusions.

CLINICAL DATA

This report is based on results obtained in 250 patients with arthritis who received a total of 1,894 infusions of procaine hydrochloride. These patients have been treated in the course of the past three years, and the majority have been under observation for at least one year after the cessation of therapy. Three patients are still receiving active treatment. Classifi-

8. Graubard, D. J.; Robertazzi, R. W.; Peterson, M. C., and Waldman, M. H.: The Management of Pain by Means of Intravenous Procaine, to be published.
9. Craig, W. McK., and Kernohan, J. W.: The Surgical Removal and Histological Study of Sympathetic Ganglia in Raynaud's Disease, Thrombo-Angiitis Obliterans, Chronic Infectious Arthritis and Scleroderma, Surg., Gynec. & Obst. **56**: 767, 1933.
10. Kuntz, A.: Histological Variation in Autonomic Ganglia and Ganglion Cells Associated with Age and Disease, Am. J. Path. **14**: 783, 1938.
11. Wright, C. I.: The Inhibition of Cholinesterase by Aromatic Amino-Alcohols of the Type AR-CHOHCH$_2$NR$_2$, J. Pharmacol & Exper. Therap. **87**: 109, 1946.
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13. Glick, D.: Specificity Studies on Enzymes Hydrolyzing Esters of Substituted Amino and Nitrogen Heterocyclic Alcohols, J. Am. Chem. Soc. **64**: 564, 1942.
14. Glick, D.: Personal communication to the authors.
15. Soehring, K.: Experimental Data on Procaine Metabolism, Brit. M. J. **2**: 533, 1948.
16. Bergmann, F.: Apropos de l'action de l'injection intraveineuse de procaine sur l'adrenalinosecretion, Compt. rend. Soc. de biol. **142**: 1187, 1948.
17. Leake, C. D.: Current Pharmacology, J. A. M. A. **138**: 730-737 (Nov.) 1948.
18. Kisch, B.; Koster, H., and Strauss, E.: The Procaine Esterase, J. Exper. Med. & Surg. **1**: 51-93, 1943.
19. Graubard, D. J.; Robertazzi, R. W., and Peterson, M. C.: A Method for Accurately Measuring the Rate of Flow of Intravenous Fluids, Anesthesiology, **8**: 372, 1947.
20. Flowrator is the trade name for the rotameter manufactured by Fischer and Porter, Hatboro, Pa.
21. The procaine hydrochloride used was supplied as novocain® by the Department of Medical Research, Winthrop-Stearns, Inc., New York. It is now available in special 1: 1,000 solution.
22. Procaine, Hydrochloride 0.1 per cent in Isotonic Sodium Chloride Solution was supplied by Abbott Laboratories, North Chicago, Ill.

cation as to the type of arthritis is based on the history, physical examination and laboratory investigation. Classification in accordance with the suggestion of the American Rheumatism Association [23] is: (1) rheumatoid arthritis; (2) arthritis due to direct trauma, and (3) degenerative joint disease (osteoarthritis).

Fig. 1.—Rheumatoid arthritis, patient T. H. J. The lateral view of the cervical spine shows smooth fusion of the anterior edges of the four lower vertebrae, producing almost a block spine. The joint spacing is vague and slightly diminished.

Rheumatoid Arthritis.—Fifty-four patients with rheumatoid arthritis received a total of 526 intravenous infusions of procaine. The largest number of infusions given to a patient was 96 and the smallest, 1. The average number of infusions per patient was 9.8. All persons in this category had been incapacitated for eight to fifteen years prior to the institution of treatment.

Table 1 *A* outlines our results. Although we first reported equivocal results in this category,[24] by intensive therapy we achieved satisfactory results. Daily infusions of procaine and ascorbic acid (vitamin C), supplemented by parenteral intramuscular injections of 500 mg. of ascorbic acid for two weeks usually produce sufficient relief of pain and spasm to allow physical therapy to be instituted. As pain decreases muscular spasm diminishes, overcoming in many instances the flexion contractures so frequently observed in these patients. Rehabilitation of the patient is of utmost importance.

We believe that this form of therapy should be used in the treatment of this type of arthritis, even though the results obtained by its use are not as spectacular as those obtained in the other types. Of the 6 patients who had no relief of pain, 4 also had ankylosing spondylitis of the Marie-Strümpell type. The 12 patients who did not increase their mobility included the 4 already mentioned and 8 with almost complete ankylosis.

The following case is illustrative of our series:

History.—T. H. J. is an electrical engineer aged 52 who was first seen by us Sept. 27, 1947. His past history was that of a gradual onset of pain in the back about fifteen years prior to admission. Within a few years of the onset the back became extremely rigid, and he was unable to bend, turn his head, or sit in a chair for any great period of time. Despite this handicap he was able to do his work. In 1945 pain and swelling of the left knee was noticed; within a few months the right knee and both ankles became painful and swollen.

Physical Examination.—Physical examination revealed an adult cooperative man, who was able to get about with the aid of two canes. The entire spine was typical of the ankylosing spondylitis found in rheumatoid arthritic spondylitis (Marie-Strümpell). There was no mobility of the spine in any direction. Figures 1 and 2 show the radiologic changes apparent at the time of examination in the cervical and lumbar regions. Both knees were swollen, the right more than the left. Tenderness was generalized, and there was decided limitation of motion. Both ankles were swollen and tender. The heart was normal in size, shape, position and sounds. The blood pressure was 120 systolic and 80 diastolic. The lungs were clear to percussion and auscultation; mobility of the costal cage was severely restricted. Radiographic examination of both knees revealed conditions typical of rheumatoid arthritis (fig. 3).

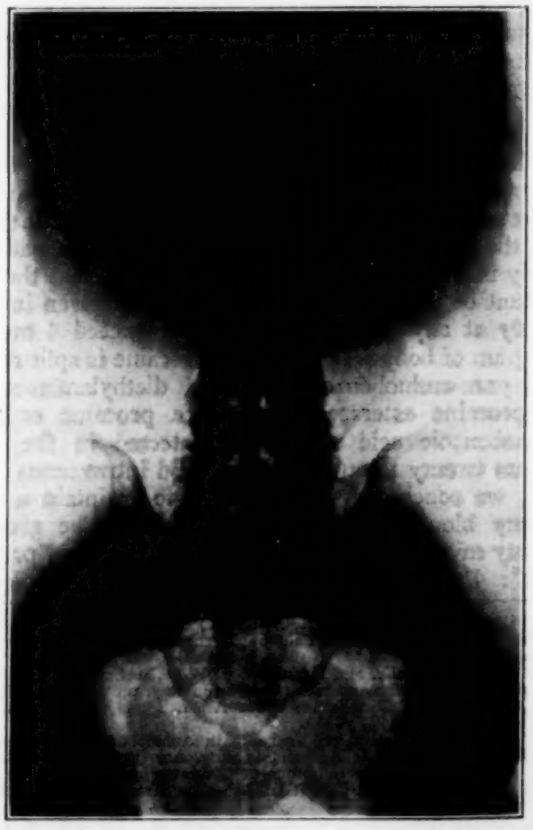

Fig. 2.—Rheumatoid arthritis, patient T. H. J. Anteroposterior view of the lumbar spine reveals a relatively free portion of the spine, with the exception of the first and second lumbar vertebrae, where there is evidence of smooth heavy exostoses. Both sacroiliac articulations are obliterated by the disease and show increased density.

Laboratory Procedures.—Urinalysis: Reaction of the urine was acid; the specific gravity was 1.022. There was no albumin or sugar. Microscopic examination revealed occasional red blood cells and a few white blood cells, most of them in mucous shreds, with occasional epithelial cells. The uric acid

23. American Rheumatism Association: Primer on the Rheumatic Diseases, J. A. M. A. **139:** 1068-1076 (April 16) 1949.

24. Graubard, D. J.; Kovacs, J.; Robertazzi, R. W., and Peterson, M. C.: The Management of Arthritis by Means of Intravenous Procaine: A Preliminary Report, read at the Annual Meeting of the New York Rheumatism Association, New York, April 19, 1947, to be published.

determination was 3 mg. per hundred cubic centimeters of blood.

Blood Examination: The hemoglobin amounted to 71.6 per cent, or 11 Gm. (Newcomer's method). There were 4,470,000 red blood cells and 12,000 white blood cells. The color index was 0.81. The differential count was 54 per cent polymorphonuclear neutrophils, 1 per cent eosinophils, 39 per cent lymphocytes and 6 per cent mononuclears. The sedimentation rate in one hour was 65 mm. (Westergren). (The normal rate in one hour is 0 to 15 mm.)

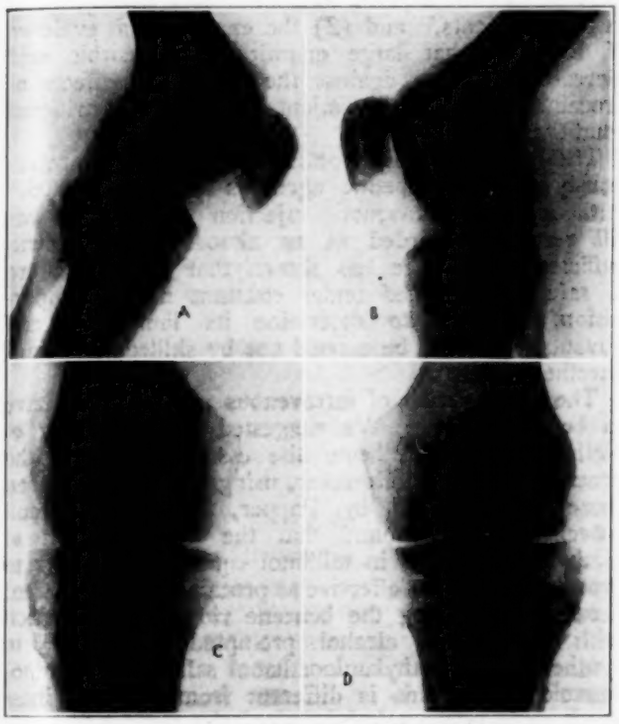

Fig. 3.—Rheumatoid arthritis, patient T. H. J. Views of the knees show exostoses at both the posterior and anterior edges of the femoral condyles in the left knee joint. Joint spacing in the left knee shows a further decrease, and there is a small plaque of thickening along the outer lip of the articular surface of the left tibia.

Progress.—The weight of the patient was 70 Kg., and he received 280 cc. of isotonic solution containing 280 mg. of procaine hydrochloride and 280 mg. of ascorbic acid. He had considerable relief of pain and spasm immediately after the infusion and was able to discard one of his canes. He received a total of 8 infusions in conjunction with a high ascorbic acid intake orally. His improvement was remarkable in that he required no salicylates. He was able to go up and down stairs without difficulty; he slept better, and he found that he was able to do many things about his house that he could not do before, such as climbing a ladder. His appetite improved.

On Jan. 6, 1948 he slipped and fell, sustaining a mild cerebral concussion and multiple contusions. There was aggravation of pain in the knees, shoulders and back. Radiographic examination revealed no evidence of pathologic conditions due to trauma. Another infusion of procaine hydrochloride relieved him of all pain and spasm.

He returned on June 19, 1948 complaining of slight pain in the knees and ankles. Another infusion of the drug was given. To the time of writing there have been no complaints of pain or spasm. He is able to drive his car, which he had not been able to do for the past ten years. His sedimentation rate taken recently was 40 mm. in one hour (Westergren).

Arthritis Due to Trauma.—There were 42 patients with traumatic arthritis who received a total of 175 infusions, or an average of 4.2 per person. The greatest number given to a patient was 15 and the smallest 1. The duration of the disease ranged from nine months to seven years (table 1 *B*).

The 1 patient who had poor results failed to return after the first and only infusion. In this category, the majority of patients state that the pain that does return four to six days after the first infusion is considerably less in intensity. The results in this type of arthritis, especially in regards to mobility, will depend on anatomic factors. Increasing mobility cannot be expected where ankylosis is evident.

Six patients had definite monoarticular traumatic arthritis of the hip following reduction and pinning. The duration of pain and limitation of motion following operative intervention had been at least one year. All had relief of pain following infusions of procaine.

In this group, the results obtained were relief of pain and varying degrees of increase in mobility. The following case is illustrative:

M. J. is a woman aged 75 who was first seen Sept. 18, 1947. In 1943 she sustained a fracture of the left hip, which was reduced and pinned satisfactorily. She was able to get up and about six months postoperatively. She did well until 1946, when she began to have severe pain and limitation of motion. The pin was removed, but pain still persisted. When she was first examined, her complaint was pain in the left hip, radiating up the back and down the thigh. The use of a cane was necessary. Active and passive movements of the hip joint were painful and restricted. Radiographic examination revealed destructive arthritis of the left hip joint. The general condition of the patient was satisfactory, her weight being 55 Kg. She received 4 infusions of 220 mg. of procaine and 220 mg. of ascorbic acid dissolved in 220 cc. of isotonic sodium chloride solution within a two week period. The results were extremely satisfactory. The relief of pain has allowed her to lead an active life. The mobility of the left hip has increased, not to the range of the right hip but sufficient to allow her increased ambulatory freedom. To the time of writing there has been no return of symptoms.

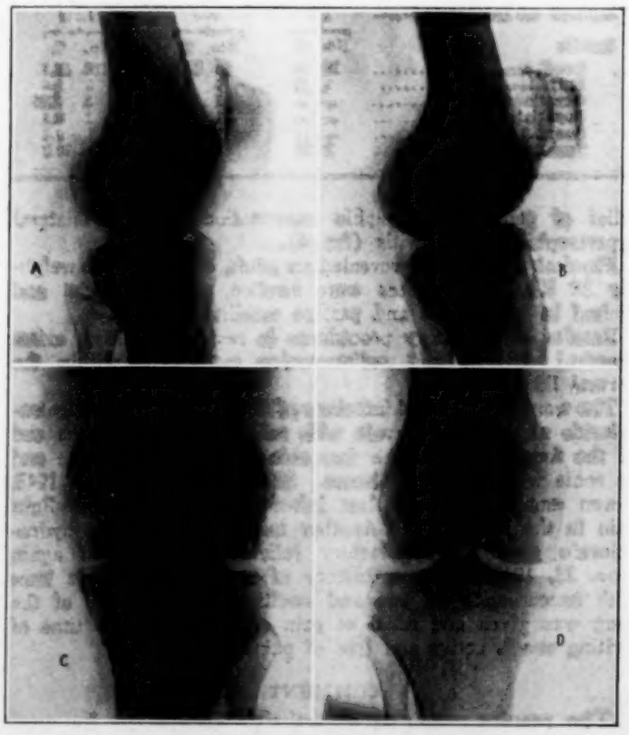

Fig. 4.—Degenerative disease of the knees, patient A. T. Pronounced osteoarthritic lipping is present throughout the osseous structures. This is especially noted in the tibial spines and the patella, in which there is a suggestion of fusion with the femoral condyles (right). Considerable proliferation is present in the posterior surfaces of the condyles and the head of the tibia. The joint space appears normal. Soft tissue swelling is present, and due to the patient's inability to fully extend the knee there is slight distortion of the structures.

Degenerative Disease of the Joints.—Degenerative disease of the joints, which is commonly known as osteoarthritis, represents our largest series. One hundred and fifty-four patients received 1,193 infusions, or an average of 7.1 per patient. The greatest number given to any one patient was 30, and the smallest was 1.

Table 1 *C* outlines the results obtained. Infusions in this group are usually given on a weekly basis. In this group will be found many patients who expect not only relief of pain but also complete restoration of function. It is generally agreed that the latter is dependent on structural changes in the surrounding musculature. Those whose results were poor were found to have other defects which masked the symptoms. These included herniated intervertebral disk, spondylolisthesis, tuberculosis of the spine, metastatic carcinoma and derangement of the meniscus of the knee. The following case is typical of our series:

A. T. is a housewife aged 63 who was first seen Oct. 5, 1947. For the past ten years she had complained of pain in both knees, especially the right knee. She had difficulty in walking and used a cane. Her disability prevented her from doing the lightest type of housework. She had received injections of gold compound, sulfur and various vaccines without relief of pain. Radiographic examination revealed bilateral hypertrophic osteoarthritis (fig. 4).

Physical examination revealed an adult, obese woman weighing 82 Kg. Both knees were swollen, tender, painful and limited in both active and passive mobility.

Results of laboratory procedures in respect to blood, urine, chemical analysis and sedimentation rate were within the normal limits.

The woman received 4 infusions of 328 mg. of procaine hydrochloride at weekly intervals with relief of pain. At the end of the fourth infusion she was able to discard her cane and do some work about the house. She returned Sept. 24, 1948, eleven months after the last infusion, complaining of slight pain in the right knee. Another infusion of procaine hydrochloride gave her satisfactory relief. She returned again Nov. 23, 1948, with the history of a fall on her left knee with exacerbation of pain and swelling. An infusion of the drug was given and relief of pain resulted. To the time of writing she is active and free of pain.

TABLE 2.—*Results Obtained at the Laconia Clinic in 215 Persons Receiving Intravenous Infusions of Procaine Hydrochloride Solution*

	Rheumatoid Arthritis		Arthritis Due to Trauma		Degenerative Diseases of the Joints	
Number of cases	10		66		139	
Number of infusions	140		651		1,844	
Results	No.	%	No.	%	No.	%
Good	18	80	54	81.8	115	82.7
Fair	1	10	6	9.09	5	3.6
Questionable	..	..	1	1.51	3	2.16
Unsatisfactory	..	..	1	1.51	1	0.7
Poor	..	..	1	1.51	1	0.7
None	1	10	3	4.54	14	10.0

COMMENT

The results obtained in arthritic conditions by procaine administered intravenously indicate that this method is a satisfactory adjuvant in the management of arthritis. Using our procedure, Gage[25] at the Laconia Clinic, Laconia, N. H., has obtained equally satisfactory results as indicated by table 2.

Whitacre, in a series of 69 cases of rheumatoid arthritis in which 255 infusions were given, reports the following less favorable results: Complete relief in 19 per cent; partial relief in 26 per cent, and no relief in 55 per cent.[26] The discouraging results obtained by Whitacre in our opinion are attributable to his failure to increase the patient's intake of ascorbic acid.

The use of ascorbic acid in massive doses in the treatment of arthritic conditions is predicated on two factors: (1) the ascorbic acid deficiency usually found in these patients,[27] and (2) the experimental evidence of Richards that large quantities of ascorbic acid increase resistance against the toxic side effects of procaine, especially in patients in a poor nutritional condition.[28]

The versatility of procaine administered intravenously as a therapeutic agent is well established.[29] Although the intravenous injection of procaine was till recently regarded as an almost fatal accident, sufficient experience has shown that this procedure is safe if performed under constant medical supervision. Studies to determine its limitations and advantages should be carried out by skilled physician-anesthetists.[30]

The exact action of intravenous procaine will have to be determined. We suggested the possibility of diethylaminoethanol being the essential part of the procaine radical.[31a] However, using smaller doses than those recommended by Papper, Brodie, Lief and Rovenstine,[31] we found that the administration of diethylaminoethanol in millimol equivalents similar to procaine was not as effective as procaine. The apparent necessity of having the benzene ring in combination with this amino alcohol prompted Richards[32] to synthesize the diethylaminoethanol salt of para-aminobenzoic acid. This is different from procaine inasmuch as it is the salt instead of the ester. Richards found it to have an LD_{50} of approximately 800 mg. per kilogram of body weight intravenously in mice, which is much less toxic even than diethylaminoethanol itself, for which this value is approximately 350 mg. per kilogram. Using this salt in the same proportion as procaine (1:1,000), we found the analgetic effect to be more than that of diethylaminoethanol hydrochloride and less than that of procaine hydrochloride in equal parts (1 Gm. of each to 1,000 cc. of isotonic sodium chloride solution). It seems to have a more sustained effect without the unpleasant sensations usually found with a 0.2 per cent solution of procaine.

Our studies with dimethylaminoethanol at the time of writing are too incomplete for a definite conclusion.

Basically, we believe that the action of procaine administered intravenously is similar to the action of procaine employed as a differential spinal block. This action is described in a series of articles by Sarnoff and Arrowood.[33]

SUMMARY AND CONCLUSION

1. The intravenous infusion of procaine hydrochloride for the management of pain in arthritic conditions is a safe procedure, provided the administration is controlled.

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26. Whitacre, R. J.: Personal communication to the authors.
27. Kovacs, J.: Personal communication to the authors.
28. Richards, R. K.: Effects of Vitamin C Deficiency and Starvation upon the Toxicity of Procaine, Anesth. & Analg. **26**: 22, 1947.
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30. Compere, E. L.: The 1948 Year Book of Orthopedics and Traumatic Surgery, Chicago, The Year Book Publishers, Inc., 1949.
31. Papper, E. M.; Brodie, B. B.; Lief, P. A., and Rovenstine, E. A.: Studies on the Pharmacologic Properties of Procaine and Di-Ethyl-Amino-Ethanol, New York State J. Med. **48**: 1711-, 1948.
32. Richards, R. K.; Personal communication to the authors.
33. Sarnoff, S. J., and Arrowood, J. G.: Differential Spinal Block, I., Surgery **20**: 150, 1946.

2. The results reported herein as obtained by the intravenous use of procaine for the control of pain in arthritic conditions are sufficiently favorable to warrant the further use and investigation of this agent by this method as a satisfactory adjuvant to the treatment of these conditions.

1082 Park Avenue (28) (Dr. Graubard).

INTRAVENOUS USE OF PROCAINE IN GENERAL ANESTHESIA

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Procaine, or the hydrochloride of beta-diethylaminoethanol para-aminobenzoate, was synthesized by Einhorn [1] in 1904 (published in 1905). Its widespread use and popularity produced many experimental and clinical reports on the pharmacology and toxicology of procaine and related compounds. These were mainly related to the subcutaneous use of the compound.

EVALUATION OF PROCAINE IN THE LITERATURE

Eggleston and Hatcher [2] in 1916 and 1919, working with cats, reported that toxic effects of procaine were in direct proportion to the rate of introduction of the drug into the blood stream. They found that the injection of a sublethal dose produced an abrupt fall in blood pressure (believed to be due to cardiac effect) and cessation of respiration, followed by brief but severe clonic convulsions. This sublethal dose could be repeated with procaine in twenty minute periods without evidence of accumulation. Also, continuous intravenous administration of the compound was tolerated when more than a lethal dose was given over a period of time. The heart rate was found to vary but was usually slowed. Death, when it occurred, was apparently due to the nearly simultaneous paralysis of the heart and respiratory center. From their experience in vitro they believed that the breakdown of procaine was mainly in the liver. The measures of resuscitation that they recommended were artificial respiration, with or without cardiac massage, and intravenous administration of epinephrine.

Lewy in 1937 [3] reported the therapeutic use of small doses of procaine intravenously in the treatment of tinnitus. Lundy [4] used 0.1 per cent solution of procaine in the treatment of pruritus. Burstein [5] gave single doses of 100 mg. of the drug intravenously in the treatment of acute arrhythmias during clinical anesthesia and emphasized its importance in cardiac or paracardiac operations. Allen [6] was the first to employ procaine intravenously for obstetric analgesia and anesthesia. He gave doses as high as 120 mg. per minute. This method was also reported by Johnson and Gilbert.[7] Fraser and Kraft [8] reported 1,500 cases in which they used a 0.1 per cent solution of procaine combined with thiopental (pentothal®) in 0.1 to 0.2 per cent solution.

In 1948 Brodie, Lief and Poet [9] reported the presence of an enzyme in human plasma which catalyzes the hydrolysis of the drug to para-aminobenzoic acid and diethylaminoethanol. They have shown that when administered at rates of 20 to 45 mg. per minute the procaine completely disappears from the blood stream in about two minutes, regardless of the duration of the injection. Also in fresh plasma in vitro 80 to 100 per cent of the drug is broken down in two minutes. They concluded that at least in the human being the liver is not an important site for the transformation of procaine. Graubard and Peterson [10] in March 1949 reported the therapeutic use of procaine intravenously in 448 cases.

TABLE 1.—*Types of Operations During Which Procaine Was Used Intravenously as an Adjunct to Anesthesia (400)*

Thoracic surgery (207) *	
Thoracoplasty	12
Resection of lung	43
Transthoracic vagotomy	38
Decortication	19
Other thoracic operations	95
Thyroidectomy	47
Laparotomy	24
Orthopedic operations	29
Laminectomy or spinal fusion	12
Laryngectomy	5
Other operations	74
Anesthesia (no operation)	2
Total	400

* The total number of administrations listed in each table.

Our interest in administering procaine hydrochloride intravenously as an adjunct to general anesthesia was initiated by results reported by Bittrich and Powers.[11] They gave a 1 per cent solution of procaine intravenously by continuous drip combined with thiopental sodium, nitrous oxide, cyclopropane or ether during anesthesia for thoracic surgery. They observed depression of coughing, decreased cardiac irritability and inhibition of sweating.

This report is based on 400 administrations of procaine (table 1). This represents less than one tenth of the total number of general anesthetics administered in the same hospitals during this period.

TECHNIC OF ADMINISTRATION

The technic of administration has been fairly constant. One per cent solution of procaine hydrochloride is prepared by dissolving 5 Gm. of sterile procaine

Read in a Panel Discussion on Intravenous Procaine before the Section on Anesthesiology at the Ninety-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 8, 1949.

1. Einhorn, A., cited by Braun, H.: Ueber enige neue Artliche Anaesthetica (Stovaine, Alypin, Novocaine), Deutsch med. Wchnschr. **31**: 1668, 1905.

2. Hatcher, R. A., and Eggleston, C.: A Contribution to the Pharmacology of Novocaine, J. Pharmacol. & Exper. Therap. **8**: 385-405 (May) 1916; Eggleston, C., and Hatcher, R. A.: A Further Contribution to the Pharmacology of the Local Anesthetics, J. Pharmacol. & Exper. Therap. **13**: 433-437 (June) 1919.

3. Lewy, R. B.: Treatment of Tinnitus Aurium by the Intravenous Use of Local Anesthetic Agents, Arch. Otolaryng. **25**: 168-183 (Feb.) 1937.

4. Lundy, J. S.: Clinical Anesthesia, Philadelphia, W. B. Saunders Company, 1942, p. 392.

5. Burstein, C. L., and Marangoni, B. A.: Protecting Action of Procaine Against Ventricular Fibrillation Induced by Epinehprine during Cyclopropane Anesthesia, Proc. Soc. Exper. Biol. & Med. **43**: 210-212 (Jan.) 1940. Burstein, C. L.; Marangoni, B. A.; Degraff, A. C., and Rovenstine, E. A.: Laboratory Studies on the Prophylaxis and Treatment of Ventricular Fibrillation Induced by Epinephrine During Cyclopropane Anesthesia, Anesthesiology **1**: 167-186 (Sept.) 1940. Burstein, C. L.: Treatment of Acute Arrhythmias During Anesthesia by Intravenous Procaine, Anesthesiology **7**: 113-121 (March) 1946.

6. Allen, F. M.: Intravenous Obstetrical Anesthesia, Am. J. Surg. **70**: 283-290 (Dec.) 1945.

7. Johnson, K., and Gilbert, C. R.: Intravenous Procaine for Obstetrical Anesthesia, Anesth. & Analg. **25**: 133-146 (July) 1946.

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9. Brodie, B. B.; Lief, P. A., and Poet, R.: The Fate of Procaine in Man Following Its Intravenous Administration and Methods for the Estimation of Procaine and Diethylaminoethanol, J. Pharmacol. & Exper. Therap. **94**: 359-366 (Dec.) 1948.

10. Graubard, D. J., and Peterson, M. C.: The Therapeutic Uses of Intravenous Procaine, Anesthesiology **10**: 175-186 (March) 1949.

11. Bittrich, N. M., and Powers, W. F.: Intravenous Procaine in Thoracic Surgery, Anesth. & Analg. **27**: 181-196 (July) 1948.

hydrochloride crystals in each 500 cc. of solution used. Five per cent dextrose solution is the main solvent, but isotonic sodium chloride solution may be used and is more stable if the solution is held over more than one day. Standard intravenous equipment is used. General anesthesia is usually started with the drug of choice (table 2), usually thiopental sodium with or without a curare preparation; however, the incidence of agents other than thiopental combined with intravenous procaine has increased in the second half of this series. Administration of the solution of procaine is started when convenient, but if it is begun within a few minutes after the induction of anesthesia, further additions of the induction agent may be minimized. It is important in starting the intravenous use of procaine to avoid a sudden rapid flow of the solution into the vein. The rate is controlled by counting the number of drops per minute. Some of the disposable sets state the number of drops required to make 1 cc., otherwise one must determine the number for a given type of dropper. Intravenous administration of the solution of procaine is started at 30 to 40 mg. (3 to 4 cc. of 1 per cent solution) per minute in the average adult; a slower rate is used for children or the elderly or debilitated patient. Many superficial procedures and thoracic operations can be completed with the patient under nitrous oxide and procaine anesthesia after thiopental induction, although small amounts of thiopental sodium are added if necessary. The use of procaine as the initial agent is not necessarily of much value but does emphasize some of the properties of the agent. The induction with other agents is often speeded up; excitement is minimal or absent; such troublesome reflexes as coughing and gagging are depressed, and smaller quantities of the induction drugs are required for sufficient anesthesia to start the operation or intubation, the latter being often accomplished without coughing.

TABLE 2.—*Drug Combinations for Induction of Anesthesia*

	Percentage
Thiopental, curare and topical cocaine *	63.7
Thiopental and topical cocaine	5.9
Thiopental and curare	2.0
Cyclopropane and topical cocaine	7.0
Cyclopropane	3.5
Nitrous oxide, oxygen and ether	6.0
Procaine 1% (as initial or only agent)	4.3

* In all instances in which an endotracheal tube was introduced to clear the airway cocaine was used to produce topical anesthesia of the larynx. However, the trachea was generally not completely anesthetized, as there was frequently coughing after intubation. It is believed that the severe spasm of the respiratory and bronchial muscles is decidedly reduced by this partial or complete topical anesthesia. This condition of pronounced reflex following intubation of the improperly anesthetized larynx is referred to as bronchospasm by some anesthetists. We believe that there is such an entity as bronchospasm from other stimuli or causes and choose not to use that term for the reflexes set up by stimulation from an endotracheal tube in an improperly anesthetized larynx and trachea. This anesthesia may be produced with any drug or method desired. We elect to use some topical anesthetic agent, especially with thiopental or cyclopropane.

TABLE 3.—*Complications Occurring During Anesthesia Due to Procaine with Thiopental Induction Followed by Nitrous Oxide and Oxygen (282)*

Complication	Number	Percentage
None	245	87.0
Blood pressure drop, moderate	13	4.6
Blood pressure drop, severe	5	2.0
Tachycardia	8	3.0
Cyanosis, all degrees *	17	6.0
Muscle twitching	3	1.0
Convulsions (generalized)	1	....
Respiratory arrest	1	....

* In some instances the apparent cyanosis of the skin was not accompanied by cyanosis of the blood in the operative field. In other instances the blood was cyanotic, and this effect decreased some time after administration of procaine was discontinued. It is not likely that many of these instances of cyanosis were directly due to the procaine. None of these patients exhibited sequelae characteristic of damage due to a shortage of oxygen.

COMPLICATIONS

The most significant and dangerous complication that may be caused by procaine is severe circulatory depression (table 3). During study of this series of cases, excessive rates of administration were used which resulted in the rather high incidence of circulatory depression. The figure noted in table 3 for "blood pressure drop, moderate" includes all depression of blood pressure recorded as probably due to procaine. In most patients thiopental inhibits the tendency for convulsive action, so that an excessive amount of procaine may produce circulatory depression without other warning signs. Without a barbiturate, muscle twitching is a more prominent feature, especially with cyclopropane induction (table 4). Probably most of the cases of cyanosis included in the table were not due to procaine, and none of these patients had any sequelae indicative of damage to the central nervous system from oxygen shortage.

TABLE 4.—*Complications Occurring During Anesthesia Due to Procaine with Cyclopropane Induction and Maintenance (48)*

Complication	Number	Percentage
None	33	70
Blood pressure drop, moderate	4	8
Blood pressure drop, severe	1	2
Tachycardia	2	4
Cyanosis (all degrees)	1	2
Muscular twitchings *	8	17
Convulsions	0	..
Respiratory arrest	1	2

* Muscular twitching is more prominent than circulatory depression when no barbiturate is used.

TABLE 5.—*Complications Due to Procaine During Other Types of Anesthesia (70)*

Complication	Number	Percentage
None	62	90
Blood pressure drop, moderate	4	5.7
Blood pressure drop, severe	0	..
Tachycardia	0	..
Cyanosis	1	..
Muscle twitching	1	..
Convulsions (generalized)	0	..
Respiratory arrest	0	..
Shallow respiration	1	..

The complications due to procaine during other types of anesthesia (table 5) were minimal, probably because of more cautious use of this agent.

The postoperative complications presented in tables 6 and 7 are difficult to evaluate from the standpoint of anesthesia. Nausea and emesis are usually considered to be due to the anesthetic agent in this type of surgical procedure; they were rare. The other complications have not been more frequent than after other types of anesthesia.

TYPICAL RESULTS WITH INTRAVENOUSLY GIVEN PROCAINE

Figure 1 is a copy of the anesthesia record during a thyroidectomy. The patient was a white man aged 43. He had been treated with propylthiouracil. The basal metabolic rate was + 14 per cent. The course of anesthesia was eminently satisfactory. (Coughing, when it occurs with procaine, is usually of mild intensity.) Recovery was quiet, without nausea or retching. Postoperative analgesia was good.

Figure 2 is a record of anesthesia during a hip nailing. The patient was a white woman aged 70. After induction of anesthesia with thiopental the patient could be maintained on a low rate of intravenous procaine (30 mg. per minute) with

TABLE 6.—*Postoperative Complications in 162 Thoracic Operations*

Pneumothorax	11
Atelectasis	9
Pleural effusion	5
Hemothorax	4
Bronchopleural fistula	4
Shock	4
Thrombophlebitis	4
Nausea and emesis	3
Hematuria	2
Wound infection	2
Empyema	1
Gastric dilatation	1
Subcutaneous emphysema	1
Cerebral thrombosis and death	1
Abdominal hemorrhage and death	1
Mediastinitis and death	1
Tachycardia	1
Bronchitis	1
No data	14
No complications	92

No definite relationship has been established between procaine and these complications. The drug seemed to be helpful in lowering the incidence of postoperative nausea and emesis.

TABLE 7.—*Postoperative Complications in 47 Thyroidectomies*

Hoarseness	2
Hematoma	3
Tracheotomy *	2
Cord paralysis	1
Pneumonitis	1
Nausea and emesis †	1
Postoperative pain ‡	2
No data	3
No complications	32

* Tracheotomy necessitated by anatomic changes and not by anesthesia.

† Nausea and emesis or nausea alone have been rare after all types of surgical operations.

‡ Postoperative analgesia has been a prolonged and prominent feature in the intravenous use of procaine during anesthesia for thyroidectomy.

nitrous oxide. During the operation the patient moved her head from time to time, but there were no troublesome reflexes or other activity. The patient awakened within fifteen minutes and had excellent postoperative analgesia. There was no nausea or vomiting.

Figure 3 shows the course of anesthesia during resection of the lower lobe of the right lung. The patient was 19 years of age and the disease was diagnosed as localized bronchiectasis. Light anesthesia was maintained after intubation. One per cent procaine solution was administered at an average rate of 62 mg. per minute. (Incidentally, flow of this intravenous dropper was about 10 drops per cubic centimeter.) The patient was awake within three minutes. There was no nausea or vomiting. Postoperative analgesia was poor.

Figure 4 is the anesthesia record of a transthoracic vagotomy performed on a man aged 44. Intravenous administration of procaine was started near the beginning of the induction and allowed to run at too rapid a rate, producing preconvulsive manifestations. Despite the light anesthesia, administration of 60 units of curare permitted easy intubation. Postoperatively, the patient was awake on the operating table; there was no nausea or vomiting.

Figure 5 shows the course of anesthesia of a Negro woman aged 47 with thyrotoxicosis, a basal metabolic rate of + 11

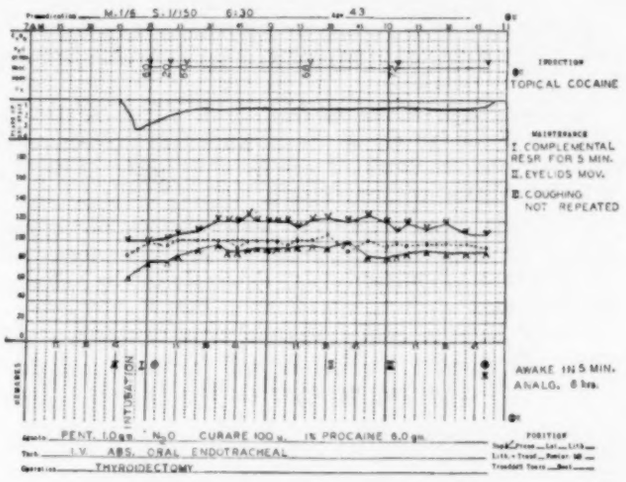
TOPICAL COCAINE
1. COMPLEMENTAL RESP. FOR 5 MIN.
2. EYELIDS MOV.
3. COUGHING NOT REPEATED
AWAKE IN 5 MIN.
ANALG. 6 hrs.
PENT. 10 gm N2O CURARE 100 u. 1% PROCAINE 6.0 gm
I.V. ABS. ORAL ENDOTRACHEAL
THYROIDECTOMY

Fig. 1.—Anesthesia record during a thyroidectomy.

per cent and hypertension with left ventricular hypertrophy. The premedication was not given as ordered, and the patient arrived in the operating room exceedingly apprehensive. The initial induction of anesthesia with thiopental lowered the blood pressure, and after thirty minutes of a fast procaine infusion rate there was a further drop in blood pressure. On slowing the rate of intravenous administration of procaine the blood pressure came up and tended toward a new fairly high level. Following an increased procaine rate of 80 mg. per minute (120 drops) the pulse weakened and the blood pressure rapidly dropped to 100 systolic. The flow of procaine was stopped, and the blood pressure returned to a normal level. This was intended to demonstrate the ability of intravenously given procaine to

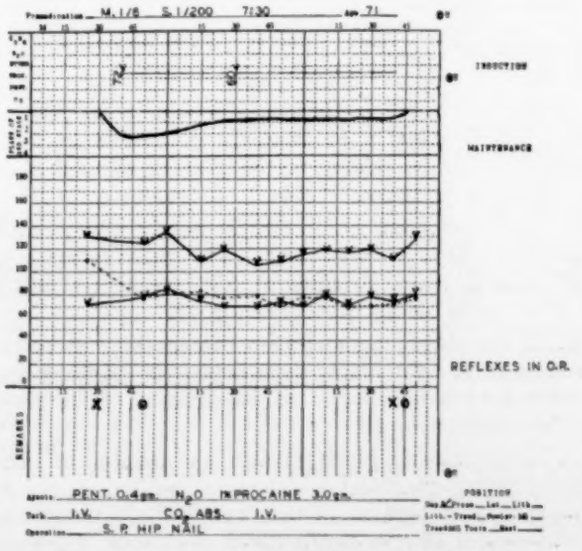

Fig. 2.—Record of anesthesia during a hip nailing.

depress circulation; therefore, no other changes in the anesthesia were made. Recovery to consciousness occurred in ten minutes. There was no pain, no salivation and no nausea and emesis. Postoperative analgesia was excellent.

Figure 6 demonstrated the intravenous use of procaine during an eight hour operative procedure with no evidence of accumulation of the procaine. This anesthesia also shows a conserva-

tive intravenous use of procaine, since supplementary injections of thiopental solution were given without limitation. The fact that the patient was awake in the operating room at the conclusion of the procedure suggests that relatively little thiopental sodium was used for such a long operation. Postoperative analgesia was satisfactory and prolonged.

ANALYSIS OF RESULTS

Advantages.—In regard to the results obtained from this intravenous use of procaine, some desirable features have been observed:

1. The cough reflex is depressed. This is not an absolute obtundation, but it is sufficiently effective to allow an endotracheal airway in most patients during light anesthesia without cough.

2. It has been relatively effective in preventing cardiac arrythmias during intrathoracic operations with cyclopropane induction, as determined by clinical observations.

3. Sweating is depressed; the skin stays dry and warm; frequently the hands will be cool and dry; seldom will a patient perspire during its use.

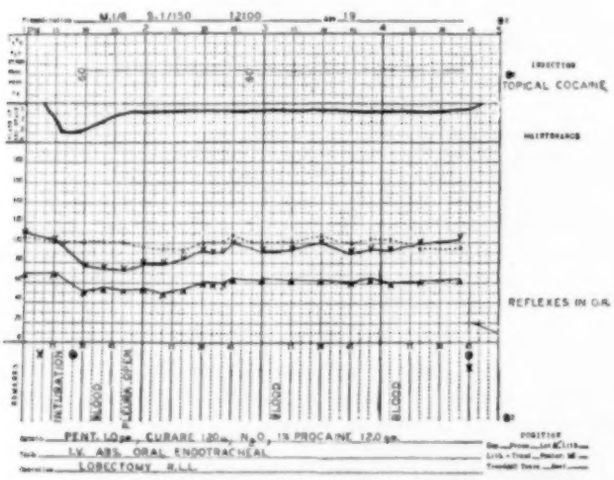

Fig. 3.—Course of anesthesia during resection of the lower lobe of the right lung.

4. The entire respiratory tract is usually dry; depression of salivation is particularly noticeable and may account for or be related to the absence of nausea and retching on recovery.

5. Recovery from anesthesia is nearly always quiet, rapid and without excitement. The patients are mentally clear in a few minutes unless excessive quantities of nonvolatile drugs have been used.

6. It provides postoperative analgesia for twenty minutes to several hours in patients who recover consciousness promptly after administration of anesthesia has been discontinued.

7. Intravenously given procaine is helpful in maintaining light anesthesia with any general anesthetic drug, probably because of the drying of the respiratory tract, control of the cough reflex and some analgesia. The part it plays in producing general anesthesia is difficult to ascertain but can be demonstrated in many patients in combination with a weak drug such as nitrous oxide.

Disadvantages.—All the dangers and disadvantages of the intravenous use of procaine probably have not been encountered as yet, but some have already been discussed.

1. Circulatory depression is the severest hazard yet encountered in the intravenous use of procaine. It is particularly dangerous because it is not preceded by any gross warning sign and because the fall in blood pressure may be exceedingly rapid. (To prevent this hazard, one should avoid rates of administration of over

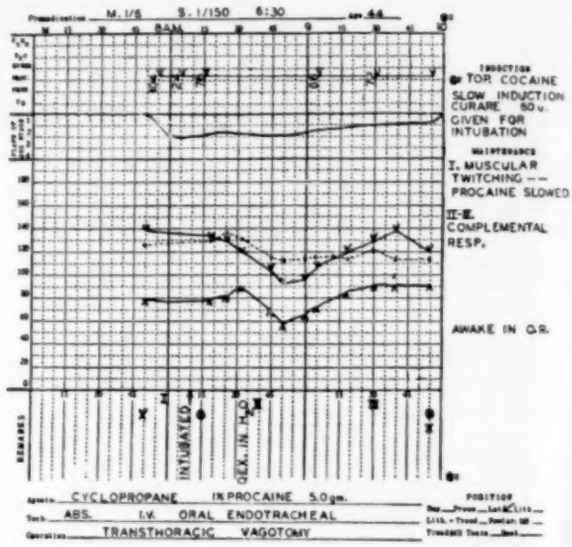

Fig. 4.—Anesthesia record of a transthoracic vagotomy.

40 mg. per minute except while watching the circulation constantly. One should use even less in elderly patients.)

2. Muscle twitching of the face generally occurs before convulsive movements. These usually cease after the rate of administration of procaine has been slowed. (Generalized convulsions may require treatment with intravenous thiopental sodium. Signs of motor irritability are readily seen and are neither a common nor a serious hazard.)

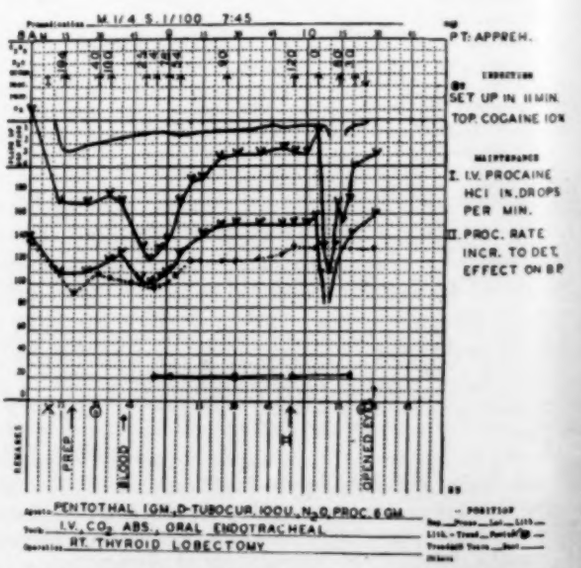
M.1/4 S.1/100 7:45
PT. APPREH.
SET UP IN 11 MIN.
TOP. COCAINE ION
I. I.V. PROCAINE HCl IN DROPS PER MIN.
II. PROC. RATE INCR. TO DET. EFFECT ON BP
PREP.
BLOOD
OPENED EYES
PENTOTHAL 1GM.,D-TUBOCUR. 100U., N_2O, PROC. 6 GM.
I.V., CO_2 ABS., ORAL ENDOTRACHEAL
RT. THYROID LOBECTOMY

Fig. 5.—Course of anesthesia during a right thyroid lobectomy.

3. Respiratory arrest occurs about the same time as circulatory depression, so it is a late diagnostic sign and therefore must not be relied on as a warning of overdosage. Respiratory arrest should be promptly treated by inflation of the lungs with oxygen.

4. Sensitivity to the drug may exist. We have not yet encountered this in the intravenous use of procaine during general anesthesia.

5. The possibility of delayed reaction or toxicity has neither been demonstrated nor ruled out.

6. Technical disadvantages are: it is necessary to have separate means of infusion that can be controlled without regard to the amount of fluid being administered; the procaine solution must be prepared fresh daily; the means of measuring the rate of flow of the solution must be available.

7. Administration of the drug by this method requires careful and continuous observation of the patient by one experienced and skilled in the administration of anesthetic agents.

The intravenous use of large quantities of procaine in conjunction with general anesthesia has exhibited some desirable features. The optimum dosage has not been determined and certainly will vary with patients and the type of anesthesia. This should not be called procaine anesthesia, nor should the procaine be expected to produce anesthesia alone. Besides the aforementioned effects of intravenously given procaine, it has been found effective in stopping hiccups during general anesthesia when administered at a rate of 40 to 60 mg. per minute, this effect requiring five to fifteen minutes of administration. Its usefulness is somewhat less when combined with ether, which in itself is an adequate anesthetic drug. The use of procaine seems to be more valuable in conjunction with thiopental sodium and nitrous oxide, because this latter combination frequently leaves much to be desired.

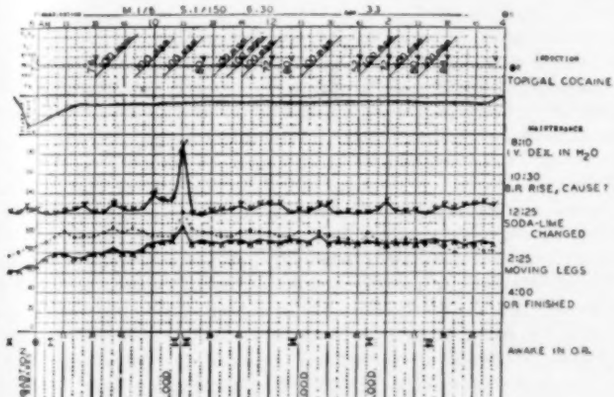

Fig. 6.—Intravenous use of procaine hydrochloride during an eight hour aneurismorrhaphy.

SUMMARY

The results obtained in 400 intravenous administrations of procaine hydrochloride during the induction of general anesthesia are presented. The experience has been that it probably has its greatest value in thoracic operations, in thyroidectomies and in many superficial procedures for which one wishes to maintain light anesthesia. One cannot stress too strongly the danger that this intravenous use of procaine will produce circulatory depression when an overdose is administered. These studies have encouraged us to continue investigation of the use of this drug by the intravenous route. It is recommended that the least amount of drug that will accomplish the desired results be employed. In this series of cases, this amount has been found to be 1 to 3 Gm. per hour in the average adult patient. The general benefit derived from intravenously given procaine seems to be due to the depression of some troublesome reflexes.

ABSTRACT OF DISCUSSION

ON PAPERS BY DRS. GODMAN AND ADRIANI; DRS. EDMONDS COMER, KENNEDY AND TAYLOR, AND DRS. GRAUBARD AND PETERSON

DR. JULIA G. ARROWOOD, Boston: The problem of the mechanism by which procaine produces the results is a fascinating one. Drs. Graubard and Peterson believe that relief of pain is the most important factor in the treatment of arthritis with procaine and that this relief results from anesthetization of peripheral nerve endings by the intravenous infusion of procaine in 0.1 per cent solution. This explanation would be compatible with the fact that, although the procaine relieves pain of the joint, it does not relieve pain resulting from pressure (e. g., pain from ruptured intervertebral disk) probably because the fibers mediating the latter type of pain are large enough to be spared by the dilute solution. Dr. Edmonds and the group who were using a concentrated solution of procaine in general anesthesia suggested that the pain threshold is raised by the intravenous infusion, by its effect both on peripheral nerve endings and on the cortex. I believe that the cortical effect is the more important. I have not had experience with the infusion of so concentrated a solution as 1 per cent, but I did not find that appreciation of pin prick was affected by the infusion of 0.1 per cent solution and Papper has stated that the pain threshold was little affected by the infusion of 0.1 per cent procaine. In regard to the effect of the drug on the autonomic nervous system, I am interested as to whether the result is a reflex one, as suggested by Dr. Graubard, or whether it is due to direct blockage of autonomic ganglions. I am not aware that there has been any investigation of the ability of a 0.1 per cent solution of procaine intravenously administered to produce the direct ganglionic blocking effect. The experiments which have been done by pharmacologists have involved the close interarterial injections of the drug. The next interesting point is the question of muscle relaxation. Is the muscle relaxation which occurs following intravenous administration of procaine in arthritis and, similarly, in tetanus the result of depression of peripheral stimulation, or is the relaxation caused by a direct "curarizing" effect of the procaine? Procaine does block the response of the motor end plate to acetylcholine, although it is not as powerful in that regard as is curare. In regard to the use of concentrated procaine solutions in general anesthesia, I fear that there is a tendency to presume on technical proficiency and to take undue risks. Physicians may be, possibly, tending to seek the relief of minor morbidity at the expense of major disaster. I fear that the injection of exceedingly large doses of procaine hydrochloride in 1 per cent solution, when the warning of muscle twitching is obscured by such a drug as thiopental sodium (pentothal sodium®), may result in tragedy.

DR. STEVENS J. MARTIN, Hartford, Conn.: An analysis of over 3,000 intravenous administrations of procaine in man, recently completed by our group at St. Francis Hospital in Hartford, has provided us the opportunity to respect many possible side actions of procaine as well as its clinical advantages and limitations. Dr. Adriani's report on the treatment of tetanus, with the seemingly paradoxic use of procaine, which has an analeptic-like property, demonstrates a well known pharmacologic principle, namely, that procaine like most drugs possesses a main action as well as several side actions. Dr. Adriani points out how the central stimulant side action of procaine can be eliminated by increasing the threshold of the central nervous system with the use of premedication and/or thiopental, tribromoethanol (avertin®) or chloral hydrate. The other more desirable responses of procaine apparently remain unaltered. This is commonly done in medical practice as shown by the use of ephedrine and pentobarbital sodium, aminophylline and amobarbital sodium, and other combinations. Dr. Adriani's emphasis on the lack of an entirely satisfactory pro-

cedure in the essential control of muscular rigidity and spasm in tetanus is most important. Procaine combinations thus far certainly are not the answer to the problem, notwithstanding the individualized, painstaking care given to his patients. The following questions appear pertinent. 1. How was the total dose determined? 2. Was the rotameter employed in the administration of procaine? 3. Should not cardiac disease be considered a contraindication to the intravenous administration of procaine? Dr. Taylor's studies, in revealing certain responses in man following intravenous use of procaine, emphasize statements made previously that premedication can minimize certain side actions. Two years ago our group reported similar observations on the first 800 administrations of procaine, employing 0.2 per cent concentration, with premedication of pentobarbital sodium 90 mg., morphine sulfate ⅛ grain (8 mg.) and atropine sulfate 1/100 grain (0.6 mg.). Despite the decrease in premedication as well as in concentration and total dose of procaine as compared to Dr. Taylor's routine, we similarly noted cough reflex obtundation, suppression of diaphoresis, suppression of undesirable reflexes, elevation of pain threshold, lighter inhalation anesthesia, rapid recovery from anesthesia without excitement and postoperative analgesia, varying from two to twenty-four hours. Fall in blood pressure was seldom great.

Dr. George J. Boines, Wilmington, Del.: Considering the fact that tetanus is 100 per cent preventable through the prophylactic injection of tetanus toxoid and tetanus antitoxin at the time of injury, it is surprising that so many cases of tetanus have been reported by the speaker from so many hospitals. It is true that some patients do not seek prophylactic injections, but prophylaxis is certainly important from the standpoint of public health. I should like to report 1 case of tetanus which was observed at the Doris Memorial Unit of the Wilmington General hospital two months ago. A white man, aged 22, was admitted April 15, critically ill with severe stiffness of the entire body. He was placed in the oxygen tent, received 200,000 units of tetanus antitoxin, and was given 40 units of curare every two hours. He received 480 units of curare during the first twenty-four hours, and treatment was continued for four days, during which he received a total of 1,120 units of the agent. Thiopental sodium intravenously and phenobarbital sodium intramuscularly were used for sedation in attempting to control the convulsions and convulsive movements. On the fifth day of hospitalization we were able to obtain mephenesin (tolserol®) for intravenous use and gave him 50 cc. of the solution intravenously three times a day. We noticed that this drug produced immediate relaxation of the entire body including the masseters. By the seventh hospital day he was well relaxed and was able to eat without any choking spells. The administration of mephenesin was continued orally, giving him 1 teaspoon (about 0.5 Gm.) of the elixir and two tablets (each 0.25 Gm.) every three hours. Mephenesin had a greater relaxing power in this case of tetanus than did curare, and we did not notice any untoward effects. This drug should be tried in more cases to establish the proper dosage.

Dr. Norbert M. Bittrich, Detroit: Our first use of 1 per cent solution of procaine was in combination with cyclopropane or ether during thoracic surgery. We found that ether did not protect the patient against convulsions when the flow was increased to therapeutic doses necessary for the control of cardiac irregularities. These amounts were approximately 8 to 10 cc. per minute. We have given as much as 19 to 21 Gm. of procaine intravenously over a period of four hours without untoward results. At present we try to give a maximum of 3 Gm. of procaine intravenously per hour. When the thiopental-procaine combination is used, it has been our experience that the dose of thiopental is considerably less than if it were used alone. The patients have an extremely easy emergence from anesthesia, and we expect them to be awake and free of pain and talking within five minutes. We often have a prolonged period of relief of pain in which no or reduced amounts of narcotics are required. We also use the thiopental-procaine combination for ocular and orthopedic surgery. Procaine, with a few exceptions, is effective for the control of the cough reflex and laryngeal spasm. When this combination is being used, we permit the use of oral airway with little danger of cough or laryngeal spasm. We have given procaine intravenously for the control of laryngeal spasm and cough with good results. We use the thiopental-procaine combination in all our orthopedic surgical operations on adults with excellent results. Anesthesia of the patient is induced with a 2.5 per cent solution of thiopental sodium, and then the 1 per cent solution of procaine hydrochloride is started at 3 to 5 cc. per minute with a rotameter used to measure the amount. Small doses of thiopental may be given at intervals. We may give an average dosage of 180 to 300 cc. of procaine per hour and possibly a total of 12 to 18 cc. of thiopental. A patient 90 years of age required as little as 8 cc. of thiopental sodium and 35 cc. of procaine hydrochloride for a Smith-Petersen nail insertion. For therapeutic purposes we have used a lot of 0.1 per cent procaine as advocated by Graubard. We have given approximately seven hundred intravenous injections. Our clinical results have been for the most part good, but we have not encountered a lack of side reactions.

Dr. Ivan B. Taylor, Detroit: I should like to emphasize that the topic is not procaine anesthesia. The anesthesia has always been produced with another drug or other drugs. This is distinctly different from the therapeutic use of procaine in unanesthetized patients for relief of pain. The situation is somewhat different in that the patient is under better observation during general anesthesia. The most important complication is that a drop in blood pressure can be produced by intravenously given procaine. A drop in blood pressure from an overdose of the drug by this route can be rapid and severe. We were obtaining this response intentionally on 1 patient and observed a drop in systolic blood pressure of 100 mm. of mercury in two minutes. We have not had this occur under ordinary conditions of anesthesia. We have not encountered these drops in blood pressure when the rate of administration was 40 mg. or less in the average adult. In the elderly patient this amount might constitute an overdose. With regard to relaxation of muscle, our experience has indicated that procaine hydrochloride administered intravenously is unsatisfactory. We do not recommend the use of over 40 mg. of the drug per minute without careful observation of the circulation, particularly in relation to blood pressure. There is no reliable or good warning sign of impending overdosage. With most of other drugs there is some warning sign, something fairly gross that can be detected without too much difficulty. The greatest hazard of giving procaine intravenously is that the warning sign of the drop in blood pressure or change in blood pressure is not readily seen. It is not seen by the surgeon; it may not be discovered by the anesthesiologist soon enough. On rates of administration exceeding 40 mg. of procaine per minute this method is considered dangerous, as is chloroform anesthesia or deep anesthesia with cyclopropane, as far as watching the circulation is concerned.

Dr. F. F. Foldes, Pittsburgh: I should like to discuss the intravenous use of procaine in certain neurosurgical procedures, in which it is important that the patient be conscious and cooperate with the surgeon. I am thinking primarily of chordotomies for intractable pain. We proceed in these case by premedicating the patient with some barbiturate, morphine or meperidine, and atropine or scopolamine. When the patient reaches the operating room an additional small dose of analgesic is administered intravenously. In our hospital chordotomies are performed with the patient face down, so that in the course of the operation the airway is not easily accessible. This is another reason for keeping the patient conscious. An intravenous infusion of 0.4 per cent procaine hydrochloride in 5 per cent dextrose solution is started when the patient is in position. This strength of procaine was chosen because it meets both the fluid and procaine requirements of the patients. At the beginning of the operation the procaine solution is administered at the rate of 40 to 80 drops (8 to 16 mg.) per minute, and the surgeon relies mostly on local anesthesia for relief of pain. However, the pain reflexes originating from the lamina and the dura cannot be controlled well by local anesthesia alone. Therefore, when these structures are reached the rate of infusion is increased to 80 to 160 drops (16 to 32 mg.) per minute. In this way the patient can be kept comfortable during the laminec-

tomy and chordotomy. After the chordotomy has been performed the conscious patient can be tested and adequate information can be obtained regarding the pain relief afforded by the operation. We have found this procedure both safe and satisfactory. We have not given ascorbic acid with procaine by the intravenous route, as Dr. Graubard does; perhaps this is why our results have been the same as those reported by Dr. Martin and Dr. Whitacre. If procaine and ascorbic acid should be used together, it might be worth while to administer 500 mg. of ascorbic acid to a controlled series of patients, and find out what, if any, results can be obtained by the use of massive doses of ascorbic acid alone.

DR. HAROLD E. GODMAN, New Orleans: The exact mechanism of the intravenous action of procaine is not known. These were clinical observations. However, we believe that raising the threshold of pain to external stimuli may be a factor. We had 1 case in which procaine by the intravenous route was used alone. Some sedation and muscle relaxation was obtained. The lumbar puncture in this patient could not be performed on the previous day, but after the administration of 1 Gm. of procaine intravenously, the puncture was accomplished with ease. Dr. Martin has asked how we judged dosage. The total dosage was determined solely by the patient's tolerance to the drug. We did not exceed 1 Gm. with any single administration. The infusion was started without benefit of a flowmeter. We merely observed the drip and counted the drops per minute. Any untoward signs indicated to us that the infusion should be slowed down or stopped altogether. Dr. Martin asked about our use of intravenous procaine in patients with cardiac disease. These cases were in children and, in the main, in healthy adults. Few patients were aged persons who unknowingly might have had cardiac disease. In the series treated with procaine, none had known cardiac disease. I agree entirely with Dr. Boines in the matter of prophylaxis. Tetanus is a disease that is entirely preventable. That was shown by the army's experience during the war. Most of our patients either were Negro or came from outlying areas in which preventative medicine is not practiced to a great extent. Therefore they had not received tetanus toxoid. Also, in this series no patient was known to have received tetanus antitoxin immediately following injury. The administration of thiopental sodium in these cases was by the intermittent method. We found that approximately thirty minutes after the administration of thiopental was discontinued the patient would again manifest muscle spasm and convulsions. We did not use a continuous infusion of the dilute solution of thiopental, and we cannot say how efficacious that might be. The oxygen therapy, the administration of tetanus antitoxin and other supportive measures were carried out by the surgical services in our hospital and were not discussed in the paper. These patients did receive oxygen, either by nasal catheter or by tent, when it was necessary.

DR. DAVID J. GRAUBARD, New York: Although the exact action on the autonomic nervous system of procaine administered intravenously is not known, clinical observations in acute anterior poliomyelitis seem to indicate the probable site of action. Smith and his co-workers (*J. Pediatrics* **34**:1 [Jan.] 1949) noted at autopsy the pathologic changes in sympathetic ganglions in fatal cases of poliomyelitis. The angiospasm in most cases not only was similar to Raynaud's disease in symptoms but also produced decided oscillometric changes. Recently, we observed that, in addition to the foregoing symptoms, many patients with acute poliomyelitis had pronounced arterial tenderness (*New York State J. Med.* **48**:2608 [Dec. 1] 1948). When procaine was administered intravenously, there was not only relief of pain but also muscular relaxation and diminution of flexure contractions. Collins, Foster and West (*New England J. Med.* **236**:694 [May 8] 1947) were able to relieve the angiospasm of poliomyelitis by means of paravertebral sympathetic blocks with procaine. Further clinical investigation of the symptom complex of pain will reveal the role that the sympathetic nervous system plays. Procaine administered intravenously seems to control by its mild sympatholytic action many of the symptoms produced by imbalance of the autonomic nervous system.

JAUNDICE

PHILIP THOREK, M.D.
CHICAGO

Jaundice, or hyperbilirubinemia, is an important subject to both the general practitioner and specialist; it always presents an interesting diagnostic problem. To have ways and means of coordinating and simplifying the subject is imperative, so that with the diagnostic armamentarium at hand a diagnosis may be readily reached and proper therapy instituted. A thorough knowledge of the pathologic physiology involved results in a more rapid and accurate diagnosis than does the memorized knowledge of the hundred and one conditions that might be associated with this symptom. It is with this in mind that the subject is presented.

PHYSIOLOGY

The fate of a normal red blood corpuscle seems to be the proper approach to the understanding of icterus. It is recalled that the normal erythrocyte eventually terminates its existence by being broken down in the spleen. In this organ the disintegrated red cell is

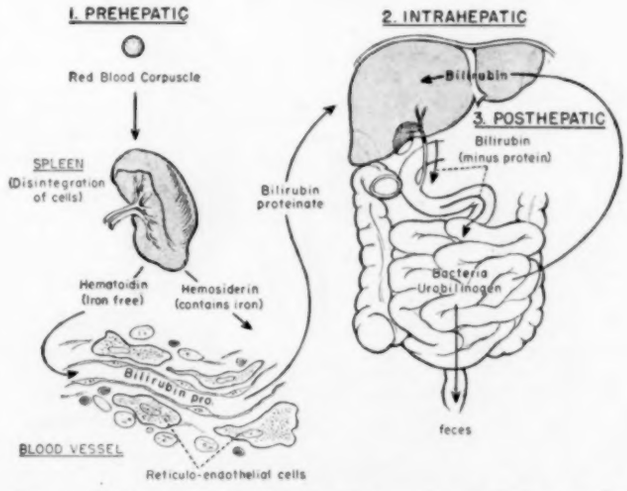

Fig. 1.—Metabolism of bile pigment. The subject of jaundice is best approached by considering it as a prehepatic, intrahepatic or posthepatic disease.

divided into an iron-containing part (hemosiderin) and an iron-free part (hematoidin). The iron-free part is the precursor or mother substance of the main bile pigment called bilirubin. As the iron-free part of a broken down red corpuscle is delivered from the spleen to the general circulation it comes in contact with the reticuloendothelial system, which is a specialized network of cells arranged around the vascular system. These cells have the ability of converting the iron free part of the red cell into bilirubin. This bilirubin is attached to a heavy protein molecule, hence it is designated as bilirubin proteinate. It is in this form that it is delivered to the liver. The liver splits the bilirubin proteinate and excretes pure bilirubin via the hepatic duct into the gallbladder. When the gallbladder contracts, bilirubin is delivered into the intestinal tract, where it is acted on and broken down by bacteria to its end metabolite known as urobilinogen (urobilin). Some of this urobilin passes out and colors the feces;

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From the Departments of Surgery of the University of Illinois, Cook County Graduate School of Medicine, Cook County Hospital, American Hospital and Alexian Brothers' Hospital.

the remainder is absorbed from the intestinal tract and is carried back to the liver via the portal system. One of the many functions of the liver is to reconvert the end product urobilinogen back to its early predecessor: bilirubin.

To thoroughly comprehend and clinically classify jaundice, one must understand this physiology and continually keep in mind the difference between bilirubin and urobilinogen.

CLINICAL CLASSIFICATION

Many classifications have been presented, each having their respective good points and drawbacks. A classification which has served well is one which divides jaundice into the following types: (1) prehepatic, (2) intrahepatic and (3) posthepatic. With this classification one can place the lesion as to its location before the liver, in the liver or after the liver.

Prehepatic Jaundice.—In icterus which develops from a prehepatic lesion the pathologic change may be found in the red blood cell. A typical example of this is familial hemolytic icterus. In this condition the red cells are apparently defective and, instead of being

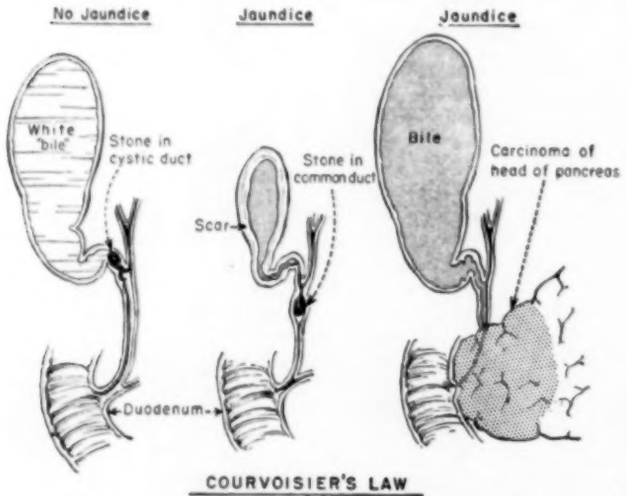

Fig. 2.—Courvoisier's law. With a stone in the cystic duct there is a large gallbladder filled with white bile and no jaundice; with a stone in the common duct there is a small shrunken, scarred gallbladder plus jaundice; with a carcinoma of the head of the pancreas both a large gallbladder and jaundice are present.

the usual normal biconcave disks, appear as "golf ball" red cells. They are also smaller than the normal cells; hence the condition has been referred to as microcytic spherocytosis. These cells have an increased fragility and rupture easily. As a result of this exaggerated bursting process, an excessive amount of iron-free pigment is excreted by the spleen, resulting in an excessive amount of bilirubin proteinate, which is formed by the reticuloendothelial system. This results in jaundice, because of hyperbilirubinemia. However, since this bilirubin is in the form of a proteinate and since this molecule is too heavy to pass through the kidney, the urine does not show the color that one would expect in the jaundiced patient (acholuric jaundice). Since an increased amount of bilirubin is being delivered to the liver, a greater amount of bilirubin is excreted into the intestines; this results in an increased formation of urobilinogen in the intestinal tract. Not only is this large amount of urobilinogen excreted in the feces, but the remainder is returned to the liver. The liver converts as much of this as it can into bilirubin, but the remainder overflows into the urine, resulting in an increased urobilinuria. Should the Ehrlich aldehyde test for urobilinogen be applied to such a urine, the result would be strongly positive; however, results of liver function tests would be negative. The van den Bergh test is of some value here, since a prehepatic jaundice gives a positive indirect and negative direct reaction.

Other examples of prehepatic jaundice are icterus neonatorum and hypersplenism. In the former, too many red blood cells are destroyed, and in the latter the spleen is hyperactive.

Intrahepatic Jaundice.—In this type the pathologic change is located in the liver. It must be remembered that the entire liver does not become involved at once; if this were to occur, death would promptly ensue. Any toxin, be it chemical or bacterial, or any organism may so injure the liver that one or more of its important functions might be interfered with. Typical examples would range anywhere from a simple catarrhal jaundice to a fulminating acute yellow atrophy. When the liver is damaged, one or more of the liver function tests show signs of hepatic dysfunction. The literature is replete with descriptions of various liver function tests, and to attempt to utilize many of these is most impractical. Many workers in this fiield have their favorite test or group of tests; at times I use some of them, but for practical purposes I prefer to confine myself to the aldehyde test for urobilinogen and the cephalin flocculation test of Hanger. If the lesion producing the jaundice is intrahepatic, then both of these tests elicit positive reactions.

Posthepatic Jaundice.—In jaundice caused by a posthepatic lesion it is assumed that the prehepatic and intrahepatic functions are progressing normally. The commonest examples of posthepatic jaundice are stones in the common duct, carcinoma of the common and hepatic ducts, carcinoma of the head of the pancreas and metastases to the porta hepatis.

The obstruction to the flow of bile into the intestinal tract may be partial or complete. If the obstruction is partial, then some bilirubin gets into the intestinal tract and this would be converted to urobilinogen. That urobilinogen which returns to the liver will be converted back to bilirubin, since the lesion is not an intrahepatic one, and the aldehyde reaction for urobilinogen will be negative. If, on the other hand, the obstruction to the outflow of bile is complete then no bilirubin gets into the intestinal tract and no urobilin is formed; therefore, the aldehyde reaction will again be negative. Liver function tests in posthepatic jaundice reveal normal functioning livers unless the jaundice has been present well over a month and is of a severe degree; a biliary cirrhosis then forms.

DIAGNOSIS

Since diagnosis constitutes the most important part of all medicine, no detail must be overlooked. In evaluation of the diagnostic possibilities in each case nothing can replace the recording of a careful and accurate history. A detailed and keen physical examination is equally revealing. Courvoisier's law is helpful (fig. 2). It states that a large gallbladder in the absence of jaundice usually suggests a cystic duct obstruction (mucocele of the gallbladder); a small gallbladder plus jaundice usually indicates a stone in the common duct, and, finally, jaundice in the presence of a large gallbladder indicates a carcinoma of the head of the pancreas. One can also differentiate the various sites of carcinoma which involve the biliary tract. For

example, in carcinoma of the gallbladder, jaundice is not present but a hard nodular mass which moves with respiration is palpable in the right upper abdominal quadrant; in carcinoma of the common duct, jaundice plus a portal vein complex (ascites, dilated esophageal varices, hemorrhoids) is present; carcinoma of the ampulla of Vater is suspected when one finds jaundice plus signs of pancreatic insufficiency, and, finally, carcinoma of the head of the pancreas can be diagnosed when jaundice plus an inferior vena cava complex (bilateral dependent edema and dilated veins of both inferior extremities) are noted.

The differentiation between a stone and a carcinoma of the common duct may not be too difficult; however, it should be remembered that, in contradistinction to the usual conception, a carcinoma may produce colic and a stone may be silent. Taking an icterus index on five successive days might clarify the diagnosis. If the lesion is a carcinoma, the icterus index is high and continues to rise; however, it is possible for an icterus index to drop if there is some slight ball-valve action in the presence of a stone. Many other ways are available for differentiation and some of these have been discussed.

Unfortunately pruritus (itching) is considered to be a symptom of jaundice; this is erroneous. Pruritus is a symptom of posthepatic (obstructive) jaundice. When the patient's primary complaint is his itching, then I feel quite positive that he is suffering from either a stone or a carcinoma which is involving the extrahepatic biliary passages. Rarely does a patient with intrahepatic jaundice complain of itching.

The pulse is usually slow in cases of icterus. I prefer bradycardia in such cases, because when the pulse becomes rapid it usually forebodes an oncoming acute yellow atrophy or hepatic decompensation.

Numerous laboratory tests are at one's disposal, but one can surmise that I have a preference for the Ehrlich aldehyde test for urobilinogen and the cephalin flocculation test. If the lesion is a prehepatic one, the urobilinogen reaction is positive and the reaction to liver function tests are negative; if the lesion is posthepatic, both of these results are negative. No tests are foolproof; however, the statements just made are found to be true in the vast majority of cases.

It seems to be a waste of time, effort and money to do a Graham-Cole test of jaundiced patients. The negative response found in these patients is most misleading. On the other hand, a flat roentgenogram of the abdomen is always taken. Time and space do not permit a discussion of the other tests available to the clinician; however, one should always keep in mind that, since no test is foolproof, diagnostic pitfalls are always present.

TREATMENT

There has been a tendency not only to classify but to discuss the treatment of jaundice under the headings of medical and surgical jaundice; this seems both impractical and misleading. When a patient with jaundice is seen one never knows whether the condition will eventually require a medical or a surgical regimen, and since the two types of therapy overlap, it seems preferable to consider them together. Only the salient parts in the therapy will be mentioned.

Needless to say, preoperative care is a major factor if a jaundiced patient is to be brought through a surgical procedure successfully. To mention only a few of the necessary essentials one might include electrolyte, water and protein balance; vitamin therapy, especially vitamins K, B and C, and an adequate glycogen supply to the liver. The severe pruritus which may be associated with jaundice can sap much of the patient's strength and energy. Recently I have used intravenous injections of procaine hydrochloride in a 0.1 per cent concentration and have found that this gives rather rapid; pronounced relief from itching in most instances. One thousand cubic centimeters of this solution is given at a rate never exceeding 1,000 cc. in one hour. A word of caution, however, should be mentioned; since the drug is a convulsant, its use in concentrated solutions or rapid injection of dilute solutions may produce irreparable damage. I feel that blood transfusions should be utilized not only as an operative or postoperative measure but also as a method of supplying many of the previously mentioned needs. Preoperative laboratory tests, such as blood cell counts, determinations of icterus indexes, prothrombin, bleeding and coagulating times, blood protein determinations, computing of albumin-globulin ratio and others, are all of value. However, none of these replace the clinical impression gained by the seasoned diagnostician as he watches his patient through this "build-up" period.

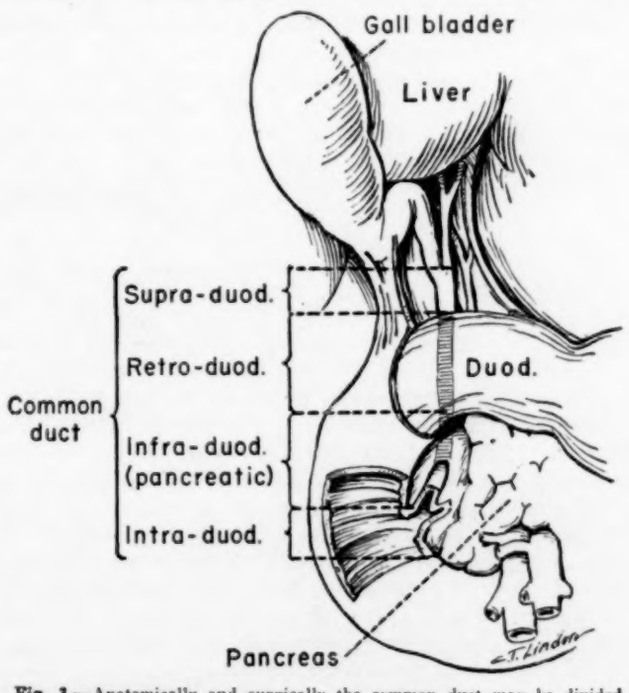

Fig. 3.—Anatomically and surgically the common duct may be divided into the following four parts, depending on its relation to the duodenum: a part above the duodenum (supraduodenal), a part behind the duodenum (retroduodenal), a part below the duodenum (infraduodenal) and a part within the duodenal wall (intraduodenal).

Many operative procedures, both curative and palliative, have been described for the jaundiced patient; the type of lesion determines the type of operation. I am of the opinion that metastases do not determine operability or inoperability; the only determining factor is fixation of the primary growth to surrounding vital structures. If the primary lesion is not fixed to a vital structure, even in the presence of operable metastases, we feel that Brunschwig's idea in attempting to remove as much of the malignant tissue as is possible is a valid one. Alexander has further stressed this point by suggesting the removal of solitary pulmonary metastases. The monumental work of Whipple in carcinoma of the pancreas has brought

those conditions which were considered inoperable only a few years ago into the realm of operability.

One cannot discuss the surgical therapy of the common duct unless he is conversant with the surgical anatomy of this structure. It is simple and practical to consider the common duct as being divided into four parts, each being related to the duodenum (fig. 3). Therefore, the common duct is divided as follows: part 1, supraduodenal portion; part 2, retroduodenal portion; part 3, infraduodenal portion (pancreatic); part 4, intraduodenal portion.

Regardless of where the stone is located, only part 1 is immediately accessible to the surgeon; therefore, the incision is placed here. A stone in either part 1 or part 2 is usually easy to remove by means of a supraduodenal choledochostomy. I prefer to drain the common duct rather than to close it, because in the presence of edema and infection one never knows when a suture might cut through. A stone located in part 3 causes no concern if it is not embedded in the duct wall. If the stone is freely movable, it can be dislocated into part 1 through a supracholedochal incision. However, if the stone has become firmly fixed in an ulcerated and edematous part of the duct wall, it cannot be dislodged. Some surgeons advocate mobilization of the duodenum to remove such a stone. Since this part of the common duct passes through the head of the pancreas and not between the pancreas and duodenum and since this area is surrounded by a cage of vessels (superior and inferior pancreaticoduodenalis arteries), this maneuver seems impractical and at times is impossible. It is of value only when the stone has eroded through the duct and the head of the pancreas; this is unusual. A preferable method to handle such impacted stones in part 3 is the following one: The flat roentgenogram which must be in the operating room is examined; it is noted that this is a flat film, and no dye has been given. If the stone is not seen on this flat roentgenogram, it is concluded that it is a cholesterol stone. If such is the case then a catheter, not a T-tube, is placed from part 1 of the duct downward to the stone; this is sutured into the common duct. In twenty-four to forty-eight hours, a few drops of ether are injected into this catheter every morning and every evening. Since cholesterol is soluble in ether, most of these stones will dissolve and disappear without further manipulation. If, on the other hand, the impacted stone in part 3 is seen on the flat roentgenogram, it is concluded that it is high in calcium content, and this usually is not affected by the etherization method of treatment. In such an instance a short-circuiting operation is done to relieve the jaundice, which, after all, is of far greater and immediate importance than the presence of a stone. The procedure which I prefer is a cholecystojejunostomy. This brings up the necessity of determining whether or not the common duct should be explored. Such a decision must be made prior to performance of a cholecystectomy, since if the gallbladder is removed and then one finds it necessary to do a short-circuiting procedure it usually is more difficult to do a cholecochojejunostomy than to do a cholecystojejunostomy. The indications for exploring the common duct are too well known to warrant repetition here. If an indication is present, the common duct is explored, the necessary procedure carried out and the gallbladder removed if there is no need for its utilization in an anastomotic procedure. A stone in part 4 is also approached through an incision in part 1. Occasionally such a stone will dilate the ampulla of Vater, and then it can be pushed into the duodenum. If this is impossible, the middle of the descending portion of the duodenum is opened and the stone is extracted transduodenally. The duodenum is then closed.

Drains in the common duct can be removed when one is certain that bile is flowing freely into the duodenum. This can be determined by means of roentgenography with a contrast medium, tying off the tube or inspecting the color of the feces. Although common duct tubes have been removed anywhere from a few days to many months postoperatively, I am of the opinion that the average common duct tube should be removed somewhere within a two and four week period.

There are cases in which it is impossible to determine preoperatively whether the condition is due to a stone or to a neoplasm and whether or not the latter is operable. Although some conditions might appear inoperable preoperatively, the patient should not be denied at least the chance of an exploratory operation. Occasionally a life can be saved by removing a stone which was thought to be a neoplasm or by removing a neoplasm which was thought to be nonresectable.

The postoperative management is as vital to a successful result as is the operative procedure itself. This part of the treatment is not relegated to the uninitiated but is preferably handled by some one thoroughly conversant with the modern approach to this all-important phase of therapy.

SUMMARY

The proper approach to the subject of jaundice both diagnostically and therapeutically is a thorough understanding of the pathologic physiology of the metabolism of the bile pigments.

It has been found advantageous clinically to classify jaundice into three groups, namely, prehepatic, intrahepatic and posthepatic.

Dividing the common duct into supraduodenal, retroduodenal, infraduodenal and intraduodenal portions aids in standardizing the various procedures applied to common duct surgery.

25 E. Washington Street (2).

ABSTRACT OF DISCUSSION

Dr. Elmer C. Texter, Detroit: Dr. Thorek has covered the diagnosis, signs and symptoms of jaundice excellently. In his conclusions he stressed the purpose of the approach to the subject both diagnostically and therapeutically, and with a proper understanding of the pathologic and physiologic processes of metabolism of the bile pigments. The classification that he just made should be remembered, and also his division of the common duct into its four parts—the intra, supra, retro and infra duodenal portions. That is particularly important to those who are surgeons, as it aids in standardizing their method of approach.

Dr. R. B. Robins, Camden, Ark.: Jaundice many times presents, as the general practitioner knows, a baffling problem in differential diagnosis, and he is interested essentially in separating the medical case of jaundice from the surgical case. Physicians have been taught the old three way classification of hemolytic jaundice, parenchymatous jaundice and obstructive jaundice, and it is interesting to have Dr. Thorek give this other three way classification from a physiologic standpoint that will be so practical to the physician at the bedside. Dr. Thorek

has presented a complex subject in a most practical and interesting manner.

DR. NAJIB-FARAH, Alexandria, Egypt: For fifteen years I have been interested in bilirubin, which is the pigment responsible for jaundice. My experiments have tended to establish that bilirubin is a factor in the processes of defense and immunity. Clinical evidence supports my division of infections into jaundice-producing and non-jaundice-producing. Bile-soluble pathogens provoked the former and bile-insoluble pathogens the latter, apart from cases in which jaundice might arise as a complication from any obstruction in the biliary passages in the course of either type of infection. Non-jaundice-producing infections are mainly characterized by the presence of normal bilirubinemia or hypobilirubinemia, suggesting the physiologic inhibition of bilirubin production into the blood as a defense against bile-insoluble pathogens. Typhoid and cholera are striking examples. In typhoid, despite the enlargement of the spleen and liver and the toxic state, the bilirubin level in the blood is generally normal, whereas one would expect to find it abnormally high; there is also inhibition of bilirubin secretion in the biliary passages as observed by Strumpell, Thoinot and Ribierre and others. In cholera jaundice is practically unknown, in spite of the toxic condition of the patients. The rice-water color of the stools is also evidence of the physiologic inhibition of the secretion of bile into the intestine as a protective measure against the cholera vibrio which lives and thrives in bile. Jaundice-producing infections, however, are mainly characterized by the presence of minor or high grades of hyperbilirubinemia generally accompanied with increase of bile salt production into the blood, as in pneumonia, syphilis or leptospirosis. The degree of hyperbilirubinemia depends on the degree of sensitivity of the causal pathogens to bile, on the nature of the infection (whether acute or chronic) and on individual reactivity toward bilirubin production. Jaundice in these cases without biliary obstruction is a regular occurrence of beneficial effect. A striking example of this process is the beneficial effect of the implantation of a jaundice-producing infection on a preexisting jaundice-producing infection: hence the success of the Wagner-Jauregg therapy in the cure of neurosyphilis based on the inoculation of the patient with malaria, rat-bite fever or relapsing fever organisms, all of them jaundice-producing and bile-soluble like the Treponema pallidum itself. This is also consistent with the general observation concerning the secondary infections arising during the course of an infectious disease; these sometimes aggravate the malady, sometimes exercise a favorable influence on its evolution. As far as rheumatism is concerned, a similar explanation suggests itself for the ameliorating effect of jaundice or the superposition of a jaundice-producing infection, such as pneumonia on chronic rheumatoid arthritis when the latter is provoked by a bile-soluble pathogen.

Intravenous Catheterization of the Heart.—Forssmann, in 1929, first introduced the method by catheterizing his own heart. In 1941, Cournand and Ranges emphasized its applicability to the study of certain physiologic changes that occur in various types of heart disease. Blood samples may be obtained from various parts of the venous system, from the right side of the heart and from the pulmonary artery and its branches for estimation of the oxygen content. At the same sites, the blood pressure may be determined with a Hamilton manometer or similar apparatus. Other investigators have used this method to study the hemodynamics in various derangements of the cardiorespiratory system. . . . Atrial septal defects can usually be diagnosed by noting the significant increase in the oxygen content of the blood from the right atrium as compared with that of the blood from the venae cavae. This results from the shunting of blood from the left atrium to the right atrium. Unusual defects, such as the draining of the pulmonary vein into the right atrium, may occasionally be encountered. An increase in the oxygen content from the atrium to the pulmonary vein as well as roentgenographic evidence of the position of the catheter will establish the diagnosis.—Don W. Chapman, M.D.; David M. Earle, M.D.; Lloyd J. Gugle, M.D.; Russell A. Huggins, Ph.D., and Walter Zimdahl, M.D., Houston, Texas, *Archives of Internal Medicine*, October 1949.

AUREOMYCIN AND ITS EFFECT IN EARLY STAGES OF SYPHILIS

A Preliminary Report

JACK RODRIQUEZ, M.D.
FREDERICK PLOTKE, M.D.
SEYMOUR WEINSTEIN, M.D.
AND
WILLIAM W. HARRIS, M.D.
Chicago

Aureomycin, one of the newer antibiotics first described by Duggar,[1] has been shown to be active against certain viruses and rickettsia,[2] gram-positive and gram-negative micro-organisms,[3] and to be even more effective than penicillin in experimental spirochetal infections, namely: relapsing fever (Borrelia novyi) and spirochetal jaundice, or Weil's disease (Leptospira icterohemorrhagiae).[4] This last-mentioned observation by Heilman prompted O'Leary, Kierland and Herrell[5] to investigate the effect of aureomycin on Treponema pallidum in man. It was concluded on the basis of a study in 2 patients with syphilis in an early stage that "aureomycin appears to have some antispirochetal activity when administered by the oral route."

On March 1, 1949 a study was initiated at the Chicago Intensive Treatment Center concerning aureomycin and its effect in early infectious dark field–positive syphilis. Twenty-seven patients had been treated by May 5, 1949. All patients in the study had dark field–positive lesions. The disease of 21 patients was diagnosed as secondary syphilis, of 3 as seropositive primary and of 3 as seronegative primary. The age range for the group was 17 through 39 years. Twenty-two patients were Negro, 1 Indian and 4 white. Twelve were women and fifteen men.

An initial oral priming dose of 2 Gm. (eight capsules of 250 mg. each) was given, and the dose was repeated four hours later; then 1 Gm. was given every four hours day and night until a total of 70 Gm. had been administered in a little over eleven days.

The effect of aureomycin in eradicating the surface spirochetes from dark field–positive lesions was studied

Surgeon (R), United States Public Health Service (Dr. Harris).
In charge of the diagnostic section, Chicago Intensive Treatment Center (Dr. Weinstein).
Venereal disease control officer; medical officer in charge, Chicago Intensive Treatment Center (Dr. Plotke).

The aureomycin used in this study was supplied by Lederle Laboratories, Division American Cyanamid Company.
From the Chicago Intensive Treatment Center, Venereal Disease Control Program, Chicago Board of Health in cooperation with the United States Public Health Service.
Under the direction of Herman N. Bundesen, M.D., President, Chicago Board of Health, and Senior Surgeon (R), United States Public Health Service (inactive).

Medical director, Chicago Intensive Treatment Center; instructor in dermatology, University of Illinois College of Medicine and research associate, Kettering Foundation for Medical Research (Dr. Rodriquez).

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3. Braley, A. E., and Sanders, M.: Aureomycin in Ocular Infections: A Preliminary Report, J. A. M. A. **138:** 426-427 (Oct. 9) 1948. Bryer, M. S.; Schoenbach, E. B.; Chandler, C. A.; Bliss, E. A., and Long, P. H.: Aureomycin: Experimental and Clinical Investigations, ibid. **138:** 117-119 (Sept. 11) 1948. Paine, T. F., Jr.; Collins, H. S., and Finland, M.: Bacteriologic Studies of Aureomycin, J. Bact. **56:** 489-497 (Oct.) 1948.

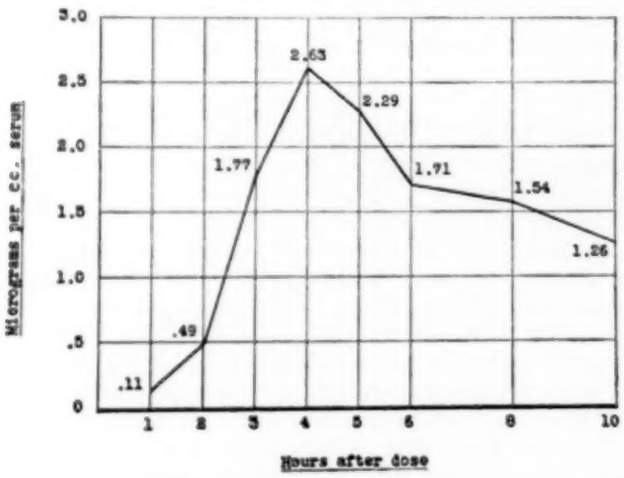
4. Heilman, F. R.: Aureomycin in the Treatment of Experimental Relapsing Fever and Leptospirosis Icterohaemorrhagica (Weil's Disease), Proc. Staff Meet., Mayo Clin. **23:** 569-573 (Dec. 8) 1948.

5. O'Leary, P. A.; Kierland, R. R., and Herrell, W. E.: The Oral Administration of Aureomycin (Dumycin) and Its Effect on Treponema Pallidum in Man, Proc. Staff Meet., Mayo Clin. **23:** 574-578 (Dec. 8) 1948.

in 16 patients. The earliest time interval necessary to render a lesion dark field negative was seventeen hours for 3 patients, and the longest was sixty-five hours for 2 patients. The average time for the group of 16 patients was thirty-nine hours.

Open lesions of syphilis healed completely in every instance, but the time interval seemed to be somewhat more prolonged as compared to that after treatment with the trivalent arsenical compounds or intramuscular aqueous penicillin. Secondary lesions of syphilis involuted completely.

Blood levels were studied in 7 patients after they had received one oral dose of 2 Gm. of aureomycin. Blood samples were drawn at the end of the first, second, third, fourth, fifth, sixth, eighth and tenth hours after the single oral dose; as shown in the accompanying chart and in table 1, the average readings were 0.11, 0.49, 1.77, 2.63, 2.29, 1.71, 1.54 and 1.26 micrograms per cubic centimeter of blood. The peak concentration occurred in the fourth hour; the level gradually diminished thereafter. The individual blood



Average aureomycin blood levels in 7 patients after one oral dose of 2 Gm. of aureomycin.

level curve describes a series of terraces in contrast to the spiking curve observed after the administration of aqueous penicillin.[6]

No aureomycin activity was observed from samples of cerebrospinal fluid drawn from 4 patients in the first hour, 4 in the sixth and 4 in the ninth hour following a single oral 2 Gm. dose of aureomycin.

Evaluation of the serologic response to treatment with aureomycin is limited to 18 patients who had had post-treatment serologic follow-up observations for eight weeks (table 2). It is obvious that a definite seroreversal trend toward negativity is evident in most patients with a positive pretreatment serologic titer. It is too early to say more.

Four of 27 patients showed evidence of a febrile Herxheimer reaction. Cutaneous Herxheimer reactions were not evident in this group. A secondary fever (100.6 F. on the sixth day and 100,0 F. on the seventh) was observed in 1 patient. Nausea occurred at least one time for 26 of 27 patients and was accompanied with vomiting for 20 patients. The gastrointestinal disturbance seemed to occur most frequently on the second through the fifth days of treatment. Aluminum hydroxide gel given prior to each dose of aureomycin helped to minimize this type of reaction. On the basis of 1 patient (not included in this study) it was observed that cutting the dosage also caused diminution of the gastrointestinal complaints and thus permitted continuation of therapy. Anorexia was consistently associated with nausea. These symptoms in no instance necessitated discontinuation of treatment, although 2 patients were not given the drug for a twenty-four hour period of rest. There was no evident effect of aureomycin on the blood and genitourinary system as judged by pretreatment and post-treatment examinations of the blood and urine. It had been reported that oral administration of large doses of this antibiotic caused a suppression of the bacterial flora of the intestinal tract. This effect may possibly impair synthesis and absorption of essential nutriments. Accordingly, each patient was given one multivitamin capsule daily during the treatment period.

TABLE 1.—*Aureomycin Blood Levels of 7 Patients Given One Oral 2 Gm. Dose of the Antibiotic*

	Micrograms Aureomycin per Cc. Serum Hours After Dose							
Patient	1	2	3	4	5	6	8	10
1	0.0	0.2	0.8	0.8	0.8	0.8	0.4	0.4
2	0.0	0.4	1.6	3.2	1.6	1.6	1.6	3.2
3	0.0	0.4	0.8	1.6	0.8	0.8	0.8	0.8
4	0.0	0.0	0.4	1.6	1.6	1.6	0.8	0.4
5	0.0	0.0	0.8	1.6	1.6	0.8	0.8	0.8
6	0.8	1.6	1.6	3.2	3.2	3.2	3.2	1.6
7	0.0	0.8	6.4	6.4	6.4	3.2	3.2	1.6
Average	0.1	0.5	1.8	2.6	2.3	1.7	1.5	1.3

TABLE 2.—*Blood Serologic Titers of 12 Patients Given 70 Gm. Aureomycin Orally*

	Blood Serologic Titers		
		After Beginning Date of Treatment	
Patient	Pre-treatment	4 Weeks	8 Weeks
1	360	120	40
2	200	100	20
3	160	20	20
4	120	20	3
5	120	40	3
6	80	...	3
7	80	...	20
8	40	20	4
9	3	1	Neg.
10	Neg.	Neg.	Neg.
11	Neg.	Neg.	Neg.
12	Neg.	3	Neg.

Under conditions described in this report, one may conclude that aureomycin causes an initial satisfactory decline in the serologic titer, rids syphilis lesions of surface spirochetes in an average time of thirty-nine hours and, administered orally in the high dosage schedule outlined, causes mild to moderate degree of gastrointestinal disturbance in almost 100 per cent of the patients.

6. For 6 additional patients whose blood aureomycin levels were later examined at the fifteenth, eighteenth and twenty-fourth hours following one oral 2 Gm. dose of aureomycin, 2 ceased to show activity of the drug in the blood at the eighteenth and 1 at the twenty-fourth hour. One patient continued to show aureomycin activity of 0.8 micrograms and 2 patients of 0.1 microgram per cubic centimeter of serum, at the end of the twenty-fourth hour.

PREVENTIVE STERILIZATION IN 1948

CLARENCE J. GAMBLE, M.D.
Milton, Mass.

Surgical sterilization by excision of a portion of the fallopian or spermatic tubes is a form of long range preventive medicine which decreases the number of children inheriting psychosis or mental deficiency. Beginning in Indiana in 1907, laws for eugenic sterilizations at governmental expense have been passed by various legislatures until these are now on the statute books in twenty-seven states. Before the Virginia law was extensively applied, the head of the Department of Mental Hygiene carried a case into court to determine the constitutionality of the law. Not content with approval by the Supreme Court of Virginia, he eventually had it appealed to the United States Supreme Court. There, in 1927, it was confirmed that sterilization was not a cruel and unusual punishment and that provision had been made for the due process of law. Justice Oliver Wendell Holmes in rendering the now famous opinion said: "It is better for all the world if, instead of waiting to execute degenerate offspring for crime, or to let them starve for their imbecility, society can prevent those who are manifestly unfit from continuing their kind. The principle that sustains compulsory vaccination is broad enough to cover cutting the fallopian tubes. . . . Three generations of imbeciles are enough."

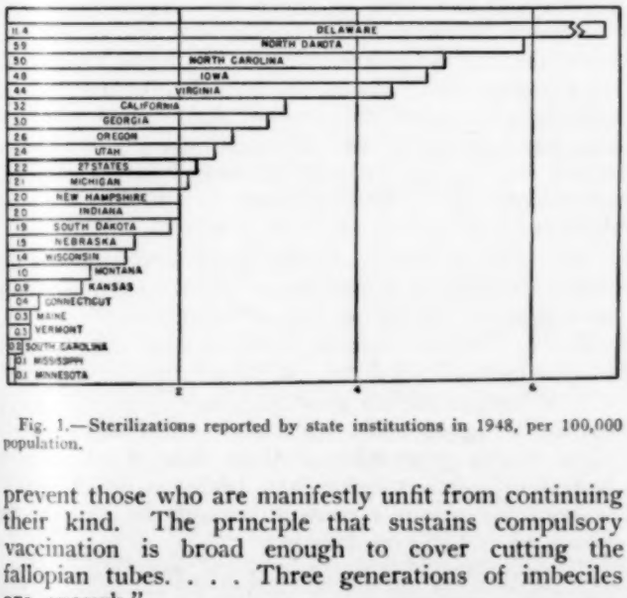


Fig. 1.—Sterilizations reported by state institutions in 1948, per 100,000 population.

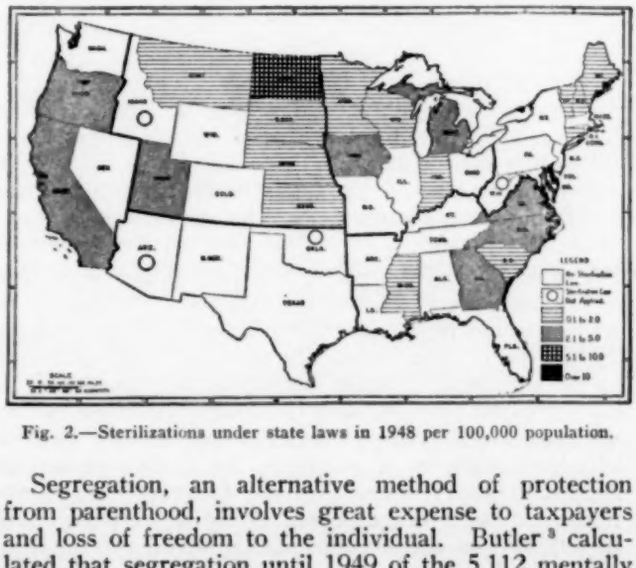


Fig. 2.—Sterilizations under state laws in 1948 per 100,000 population.

Reports collected by the Human Betterment Foundation of California and by Birthright, Inc.[1] show the number of sterilizations reported by state institutions under these laws. By the end of 1948 the total was 49,207. California has used its law most extensively, having reported 19,042. Virginia was second with 5,366, and Kansas third with 3,001. In the twenty-seven states having sterilization laws, there were 1,336 such operations performed in 1948. In 28 per cent of the subjects these operations were performed because of insanity and in 67 per cent because of feebleminded-ness. For comparisons between the states, the numbers reported from each state per 100,000 population have been calculated, with the use of the United States Census Bureau's estimate for 1948. These are shown in figure 1 and in the map (fig. 2). Delaware was the most active with 11.4 per 100,000, followed by North Dakota, North Carolina and Iowa. For the twenty-seven states, the 1948 operations were 2.2 per 100,000.

For an indication of the adequacy of the sterilization program, the operations reported may be compared with the annual number of new patients with psychosis or mental deficiency. In the twenty-seven sterilization-law states in 1946, the last year for which the information is available, there were 29,428 first admissions with psychosis and 14,959 deaths. The difference, which in the long run must equal the first discharges, was 14,469. This is 39 times the 368 sterilizations performed because of insanity. By a conservative estimate feebleminded persons constitute at least 1 per cent of the population. The assumption that they have an average life span of 50 years indicates that each year there are at least 20 additional feebleminded persons per 100,000 population. This is nine times the 901 sterilizations of the feebleminded reported for the twenty-seven states and nearly twice those in the most active state.

That tubectomy is an effective method of prevention of mental deficiency is indicated by a study by Johnson [2] in New Hampshire. Reviewing all accessible children of those sterilized for feeblemindedness in that state, she found that 36 per cent of them were mentally deficient and an additional 38 per cent were retarded.

Segregation, an alternative method of protection from parenthood, involves great expense to taxpayers and loss of freedom to the individual. Butler [3] calculated that segregation until 1949 of the 5,112 mentally deficient persons sterilized at the Sonoma State School in California would have cost at least $21,831,300. Furthermore, it would have involved 72,771 patient years of institutionalization. Applying these proportions to the 24,957 feebleminded persons sterilized in the twenty-seven states, he estimated that segregation would have cost $101,000,000 for 350,000 patient years.

The major obstacle to the use of tubectomy for this form of preventive medicine appears to be lack of knowledge on the part of the public of the nature of the operation. Having heard only of the barnyard form of sterilization by castration, they do not understand that the only result which the patient can detect is the desired one that children are not born. If each physician will explain this fact to those of the laity with whom he has contact, protection of the next generation from the inheritance of psychosis and mental deficiency will become more complete.

255 Adams Street.

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Special Article

THE PROBLEM OF MALPRACTICE

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Los Angeles

Malpractice constitutes a real threat to the members of all the healing professions. Doctors of medicine were attacked first and are still the primary targets. In 1937 about 4,000 of them were sued for malpractice in the United States. The plague spread to involve dentists, osteopaths, chiropractors, naturopaths and nurses. Now, even veterinary surgeons are being assailed with malpractice suits with increasing frequency.

Public confidence in the medical professions is seriously affected by the ill will and misunderstanding engendered by these frequently unfounded and sometimes malicious onslaughts against medical practitioners. Past experience teaches that in the event of another period of economic recession it must be anticipated that the number of claims will greatly increase.

No physician is immune to a malpractice suit. Obviously a physician cannot be justly accused of malpractice if he cares for every patient with painstaking attention to the requirements of good practice. However, the exercise of even the highest degree of skill and care will not ward off the unjust claim. A point has been reached at which any physician is unwise who does not routinely take all the available precautions to safeguard himself against the unjust accusation of malpractice.

The law requires that every person act with due or ordinary care toward his fellows. Failure so to act constitutes negligence. Due or ordinary care means the degree of care commonly possessed and exercised by the ordinarily prudent person in the conduct of all his activities. A standard is thus established which all must meet. Anyone in everyday activity may be adjudged negligent if an injury to another person or another's property results from failure to do something that the average person would do or from doing something that the average person would refrain from doing in the same circumstances.

There is a legal standard, too, which the professional man must meet in carrying out his professional activities. The standard is always what the ordinary, reputable practitioner, in the same field of practice, in the same or in a similar locality, would do and what he would refrain from doing in a similar case.

The failure of a medical practitioner to meet the standard of practice, with injury resulting to his patient, constitutes professional negligence. Professional negligence is called malpractice by the courts.

PHYSICIAN-PATIENT RELATIONSHIP

An analysis of physician-patient cases reveals that the courts almost uniformly hold that a physician is bound (1) to use reasonable care, attention and diligence in the performance of his professional services; (2) to act according to his best judgment in treating his patients, and (3) to possess and exercise the degree of skill and of learning which is ordinarily possessed and exercised by members of his profession in the same or in a similar locality. Failure to perform his duty in these respects is regarded as malpractice. But if the physician has fully complied with his duty and has exercised the requisite degree of care and skill, he is not ordinarily held liable for mere error of judgment (if there is any) in the selection of the course of treatment to be followed. The physician is justified in his selection of a method of treatment if it is one that would be approved by even a respectable minority of his reputable colleagues in the locality. However, he cannot excuse himself on the theory of mere error of judgment if he fails to inform himself of facts by a proper examination of the patient.

One who holds himself out as a specialist and who claims to be expert in a particular field of practice is held to a higher degree of care and skill than is an ordinary practitioner. He must possess and exercise the degree of care and skill commonly possessed and exercised by the specialist in the particular field of practice.

Unless he so expressly agrees and undertakes, a physician is not held to be an insurer or warranter of the results of his treatment. A good result is not impliedly guaranteed. Nonsuccess or unsatisfactory results will not alone establish the elements of legal detriment. This point is well illustrated in a case[1] in which the court said that a physician cannot be held responsible for the failure of the patient to respond satisfactorily to treatment or to make rapid progress toward recovery if the physician used a treatment which was recognized and customary in the medical profession and if he employed reasonable skill and diligence.

The patient must always authorize or consent to the treatment which is administered. Above all, there must be consent to operation. Oral consent is valid, but, obviously, proof of consent is easier when the authorization is in written form. With reference to consent, a New York court in a controlling case[2] said that every human being of adult years and sound mind has a right to determine what shall be done with his own body and that a surgeon who performs an operation without his patient's consent commits an assault for which he is liable in damages.

In an operation on husband or wife the consent of the one being operated on is sufficient.[3] However, in an operation on either husband or wife which is likely to result in sterility, it is desirable to secure the written consent of both the husband and the wife. It should be borne in mind, too, that it is hazardous to sterilize any person except on a positive medical indication.

In cases in which an operation is made compulsory by law (such as vaccination or sterilization[4]) the law furnishes the consent. If an operation is unlawful, consent to the performance thereof does not absolve the surgeon from liability.

The consent of a person non compos mentis is no consent at law. The consent of the one who stands in the position of guardian to such a person is required for performance of an operation. If the patient is a minor, consent to operation must be obtained from the parents or guardian.

Read as one of a series of lectures before all applicants for membership in the Los Angeles County Medical Association.

1. McCartney v. Hyman (Pa.), 4 Atl. (2d) 581.
2. Schloendorff v. New York Hospital, 211 N. Y. 125.
3. Rytkonen v. Lojacono (Mich.), 257 N. W. 703; Burroughs v. Crichton, 48 App. D. C. 596.
4. Under Eugenic Sterilization Statutes.

In an emergency which justifies immediate action for the preservation of the life or health of a patient, and in which it is not practicable to obtain his consent or the consent of any one authorized to speak for him, it is the duty of the attending physician to perform such operation as good surgical practice demands without such consent.[5]

In the absence of evidence to the contrary there is a presumption that a physician has performed the duty undertaken by him with reasonable care and skill. Negligence or want of skill must be affirmatively proved. The rule is well established that a physician cannot be held liable for the death of a patient under his treatment where there is no evidence to show negligence or lack of skill on his part to overcome the *prima facie* case in his favor. In any case, however, when the plaintiff proves by a preponderance of all of the evidence that he suffered injury because the physician failed to act in accordance with the standard of practice in the community, he may recover a judgment for monetary damages against the physician.

In the ordinary case legal proof of malpractice requires that some physician testify on behalf of the patient. This requirement is readily understandable, for only a physician is competent to say what is or is not good practice, either in diagnosis or treatment. A lay person may state what was done, but only a physician can testify as to the propriety of the things done. Ordinarily then, a malpractice action will fail unless some physician comes into court and gives testimony which, in effect, condemns the defendant physician's conduct of the case.

Expert testimony is unnecessary in actions based on allegation of operation without consent, invasion of the right of privacy or breach of warranty to cure or to effect a certain result. In matters which are within the common knowledge and understanding of laymen, expert testimony is not necessary. Further, whenever a practitioner acknowledges fault or negligence, by his own statement or admission, expert testimony may not be required.

EXTRACTS FROM MALPRACTICE CASES

Extracts from a few cases will illustrate the foregoing comments:

1. In a North Dakota case[6] the court said that, as a general rule, it is improper to submit a malpractice case to a jury without expert testimony to establish the standard according to which the jury is to judge the conduct of the defendant.

2. In a California case[7] the court said that standards of practice of physicians in a community can be established only by the testimony of experts.

3. In an Iowa case[8] the court said that the testimony of laymen or nonexperts cannot determine whether or not a physician exercises the degree of care and skill required of him in the treatment of a particular patient, for only those learned in the profession can say what should have been done or that what was done ought not to have been done.

4. In a Nebraska case[9] it was held that when a case demands the employment of scientific technic of which a layman can have no knowledge, a charge of negligence must be proved by expert witnesses.

5. In a Kentucky case[10] the court said that the right of recovery in a malpractice action can be established only by the testimony of experts unless the evidence shows an act or an omission within the common knowledge and understanding of laymen.

6. In an Indiana case[11] it was held that when the patient proves that an incision was closed over a laparotomy sponge used in an abdominal operation, expert testimony concerning negligence of the operating surgeon is unnecessary.

7. In a Kansas case[12] it was held that negligence in not setting or treating a badly dislocated elbow need not be established by a medical witness, since it is a matter of common knowledge that such an injury needs treatment.

8. In a California case[13] it was said that it is common knowledge that the removal of the uvula and of a portion of the soft palate is no part of a tonsillectomy.

9. In Illinois[14] a physician was sued as the result of a burn sustained by a patient from an electrotherapeutic machine. The plaintiff's mother had stated to the physician that the plate was loose and that the burn was due to carelessness. The defendant's response to her, "I know it and I can't tell you how bad I feel about it," was admissible as an admission against interest.

10. In a Washington case[15] the court said that the law is well settled that a physician may specially contract to effect a certain result and that he then becomes liable on his contract for failure to fulfil his agreement.

There is no doubt that a physician has a duty to make a sufficiently full disclosure of all of the pertinent facts of a case so that the patient may be in a position to decide, intelligently, whether to submit to any original or subsequent treatment. This conclusion is supported in many cases:

1. In an Oklahoma case[16] the point was made that it is the physician's duty to exercise the highest degree of good faith in dealing with his patients.

2. In a California case[17] the court said that the confidential relationship of physician and patient imposes on the physician the duty of refraining from fraudulent concealment with respect to matters on which he is consulted by the patient.

3. In a number of cases[18] from several states the courts have held that, if the attending physician knows that he cannot accomplish a cure or that the treatment adopted will probably be of no benefit, it is his duty to advise his patient of these facts.

The doctrine of *res ipsa loquitur* is of increasing importance in the law of malpractice. *Res ipsa loquitur* (literally, the thing speaks for itself) is a doctrine of the general law of negligence. It is held applicable whenever one person is injured by an instrumentality entirely in the control of another person, the use of which does not ordinarily result in injury if the person in control exercises due care.

Generally, as has been indicated, the proof of a physician's negligence must be established by the testimony of medical expert witnesses. The application of the doctrine of *res ipsa loquitur* creates in the case an inference of negligence on the part of the defendant, and it relieves the plaintiff of the necessity of proving the alleged malpractice by the testimony of experts. It places on the defendant the burden of making explanation, if he can, to offset the inference of negligence; and by the majority rule a question is created for the jury, regardless of any and all evidence presented by the defendant.

5. 48 C. J. 1131; Jackovach v. Yocum (Iowa), 237 N. W. 444.
6. Whitson v. Hillis (N. D.), 215 N. W. 480.
7. McNamara v. Emmons, 36 Calif. App. (2d) 199.
8. Nelson v. Sandell (Iowa), 209 N. W. 440.
9. Winters v. Rance (Neb.), 251 N. W. 167.
10. Stacy v. Williams (Ky.), 69 S. W. (2d) 697.
11. Funk v. Bonham (Ind.), 183 N. E. 312.
12. McMillen v. Foncannon (Kan.), 273 Pac. 237.
13. Thomsen v. Burgeson (Calif.), 79 Pac. (2d) 136.
14. Adamsen v. Magnelia, 280 Ill. App. 418.
15. Brooks v. Herd (Wash.), 257 Pac. 238.
16. Mattingly v. Sisler (Okla.), 175 Pac. (2d) 796.
17. Pashley v. Pacific Electric Co. (Calif.), 153 Pac. (2d) 325.
18. Tvedt v. Haugen (N. D.), 294 N. W. 183; Lewis v. Durnell (Maine), 24 Atl. 945; Logan v. Field, 75 Mo. App. 594; Benson v. Dean, 232 N. Y. 52; Mernin v. Cory (Calif.), 79 Pac. 174.

The doctrine of *res ipsa loquitur* has been held applicable in the field of malpractice chiefly in cases which involve (1) slipping instruments, (2) sponges left in the tissues, (3) burns from heating modalities, (4) roentgen radiation injuries (generally limited to cases wherein the roentgen ray is being used diagnostically), (5) infection through the use of an unsterilized needle or instrument and (6) injury to a portion of an anesthetized patient's body outside the field of treatment or operation.

The doctrine of *res ipsa loquitur* has been held applicable in cases such as those which follow:

1. In a Minnesota case [19] a patient's tongue was cut by an electrically driven instrument.

2. In a Washington case [20] the court held that a surgeon is negligent as a matter of law when, in performing an operation, he leaves a sponge in the wound and there is no possibility of any good resulting therefrom.

3. In a New Jersey case [21] the court said that, notwithstanding the nurse's count, a duty remained with the defendant to examine independently to make sure that no foreign body remained in the patient's body.

4. In a Montana case [22] the surgeon was employed to remove a fibroid tumor and the appendix, and the patient sustained a burn on the chest while anesthetized.

5. In cases from many states [23] negligence was assumed when injury followed diagnostic use of roentgen rays.

On the other hand, the doctrine of *res ipsa loquitur* has been held not to apply in the following cases:

1. In a Minnesota case [24] the court said that the failure on the part of a physician to effect a cure by treatment and operation was not ground for the application of the doctrine, since such failure occurs under the most skilful and careful treatment.

2. In another Minnesota case [25] negligence was not assumed from a claim that death resulted from the injection of an anesthetic agent.

3. In a Washington case [26] the doctrine was held not applicable when the patient's bladder leaked after an operation for the removal of the uterus.

4. In a Minnesota case [27] the doctrine was held inapplicable in action against the surgeon when expert testimony disclosed that a lesion discovered on the patient's thigh after operation could have resulted from a cause or causes other than the alleged burn from a hot water bottle.

5. In an Alabama case [28] it was held that the doctrine does not apply to the mere fact of the occurrence of a blood infection, no matter how closely in time the infection may follow a medical treatment.

There is a threatening and obvious trend toward extending the doctrine of *res ipsa loquitur* to embrace more and more cases. Unless this trend is checked, the occurrence of a bad result will in itself give rise to an inference that the attending physician was negligent. In such a situation, every physician who is foolhardy enough to practice at all will for all practical purposes become an insurer of the results of his treatment.

A physician's liability for negligence or malpractice extends to acts or omissions of his employees, within the scope of the employment. He is also, of course, liable for the professional acts of a partner. Further, he is liable for the acts of hospital personnel, as far as such acts occur under his direct supervision and control; thus the operating surgeon, and not the hospital, is liable for negligence in the operating room.

Whenever a medical practitioner enters a case in response to a request that he render professional services, he is legally bound to give (or to see that there are given) such services as the case requires until they are no longer needed; he is freed of responsibility only if he is discharged or if he withdraws from the case. This responsibility is illustrated in 2 typical cases:

In a North Dakota case [29] the court said that part of the physician's correct treatment of a patient is the careful and proper determination of the moment when relation with the patient shall end.

In an Alabama case [30] it was held that when a physician undertakes to treat a patient whose condition he knows to be such that without continuous or frequent attention injurious consequences may result, he must either render such attention himself or see that some other competent person does so.

In all cases sound professional judgment must be exercised to provide, in accordance with the standard of practice, sufficient observation, investigation and treatment.

Whenever the rendition of professional services is followed by a less than perfect end result, a potential malpractice claim exists. When a poor result is accompanied by an unfounded suggestion that faulty treatment was administered, a malpractice claim can almost automatically be expected. This analysis of the situation is not pleasant, but it is realistic. Perhaps little can be done to eliminate poor results; however, it is not only possible but imperative that the factor of unfounded criticism be eliminated.

More than 75 per cent of all malpractice cases are precipitated by some medical practitioner's criticism of the work done or the result obtained by another. Such unethical and destructive criticism obviously must be stopped.

To be sued for malpractice is a miserable experience for any physician. His reputation and his professional integrity are assailed and put in jeopardy. The mere filing of a malpractice action is in itself injurious to him. For example, it is altogether different than being sued for allegedly negligent driving of an automobile. In addition to the mental and emotional stress and loss of time to the physician, the increasing number of unjustified claims is imposing a mounting burden of costs. Furthermore, and no less significant, there is inevitably a lowering of public confidence in the medical professions.

Concrete evidence shows that most of the malpractice claims which are brought against members of the healing professions are not meritoriously founded—that is, the majority of such claims are not honestly and factually justifiable. Moreover, the targets of these actions are not exclusively or generally charlatans or quacks. On the contrary, more than half of all the defendants in these actions are above the median in experience, reputation and ability in their respective fields of practice.

19. Ellering v. Gross (Minn.), 248 N. W., 330.
20. McCormick v. Jones (Wash.), 278 Pac. 181.
21. Stawicki v. Kelley (N. J.), 174 Atl. 896.
22. Vonault v. O'Rourke (Mont.), 33 Pac. (2d) 535.
23. Lewis v. Casenburg (Tenn.), 7 S. W. (2d), 808; Shockley v. Tucker (Iowa), 103 N. W. 360; Hamilton v. Harris (Texas), 223 S. W. 533.
24. Johnson v. Colp (Minn.), 300 N. W. 791.
25. Johnson v. Arndt (Minn.), 243 N. W. 67.
26. Brear v. Sweet (Wash.), 284 Pac. 803.
27. Wallstedt v. Swedish Hosp. (Minn.), 19 N. W. (2d) 426.
28. Woodlawn Infirmary, Inc. v. Byers (Ala.), 112 So. 831.
29. Halverson v. Zimmerman (N. D.), 232 N. W. 754.
30. Jackson v. Burton (Ala.), 147 So. 414.

These charges of malpractice have become so common that in certain localities every patient with a less than perfect end result is a potential malpractice claimant. If a physician is intelligently malpractice-conscious, he must and will give thought to safeguarding himself while he is treating a patient, because an unjustifiable claim may eventuate from the case. This unwholesome situation is steadily becoming worse. Obviously, the public interest is seriously and deleteriously affected by it.

PREVENTION OF MALPRACTICE SUITS

Prevention is the best defense against malpractice. The following briefly outlined measures have been found to be effective and have been recommended, in whole or in part, by all who have given consideration to the problem of malpractice:

1. The physician should care for every patient with scrupulous attention to the requirements of good medical practice.

2. The physician must know his legal duty to the patient.

3. The physician must avoid destructive and unethical criticism of the work of other physicians.

4. "Ideal" medical records should be kept in every case: records that would be presentable when offered in court; records that clearly show what was done and when it was done; records that indicate that nothing was neglected and that the care given fully met the standard demanded by the law. If any patient discontinues treatment before he should, or fails to follow instructions, the record should show it; a good method is to file a carbon copy of the letter which advises the patient against the unwise course.

5. The physician should be careful to avoid making any statement which constitutes or which might be construed as an admission of fault on his part. Such an admission, which is usable against the physician, might be made to a third party as well as to the patient at any time before the trial. Such an admission may be made by an agent or employee of the physician during the course and within the scope of the employment. It is important to instruct employees to make no statements.

6. The physician should exercise tact as well as professional ability in handling his patients. A proper professional manner and a sound attitude should be maintained at all times, both toward the patient and toward the patient's family. The attentive physician may early sense some unsatisfactory and disturbing undercurrent, which may be prevented by the institution of protective measures, from developing into something much more unpleasant. Thus, if the patient is not doing well, consultation may be suggested; if the patient is dissatisfied or complaining, or if the family's attitude indicates dissatisfaction, consultation should be demanded. The use of a consultant affords, in any case, great protection against a malpractice claim.

7. The physician should refrain from over-optimistic prognoses and should avoid promising too much to the patient.

8. The physician should advise his patients of any intended absence from practice and should recommend, or make available, a qualified substitute.

9. The physician should unfailingly secure written consent for operation and for autopsy.

10. There should be careful supervision of assistants and employees and great care in the delegation of duties to them.

11. The physician should have some knowledge of the Statute of Limitations and of its significance.

12. In his selection of patients the physician should limit himself to such fields as are well within his qualifications. He should keep abreast of progress in the medical profession.

13. The physician should keep inviolate all confidential communications.

14. He should frequently check the condition of his equipment and make use of every available safety installation.

15. In the treatment of the patient the physician must not experiment.

16. The physician must be careful to render sufficient care to his patient in general instructions, frequency of visits, clinical and roentgen ray laboratory investigations and the like. Moreover, every precaution should be instituted for the protection of those caring for the patient and of all other contacts.

17. The patient must not be abandoned. The physician-patient relation can be terminated without liability only in certain ways and under certain conditions.

18. The physician should never reveal that he carries professional liability insurance. He should never write a letter or make any statement with reference to a malpractice claim, except on the recommendation of his legal adviser. Immediately on being advised of even the possibility of suit he should consult with his attorney.

19. The physician should arrive at an understanding in the matter of fees. Misunderstanding in this matter, particularly when the question of excessive fees arises, contributes an avoidable element of risk.

20. The physician should secure legal advice if he is called to attend a coroner's inquest as a witness in a case in which he has been in professional attendance.

21. The physician should realize that because of the possibility of error in transmission, it is dangerous to telephone a prescription.

22. The physician should realize that it is hazardous to sterilize any patient, except when a medical indication exists.

23. Except in actual emergency, no female patient should be examined unless a third person is present. There is no more serious or destructive charge in the "malpractice book" than that of undue familiarity; and the only way to avoid claims of this sort seems to be to have some one else present during all examinations.

CONCLUSION

Those who have realistically viewed the problem have realized that there is no malpractice Santa Claus, that the problem will be solved only by the affirmative and purposeful action of the professional groups. Physicians must learn what they may do to safeguard themselves and must put into effect every possible precaution against unjust malpractice accusations. The vast majority of malpractice suits can be avoided by scrupulous attention to the requirements of good practice, provided that this attention is accompanied by an equally scrupulous care for the reputation of fellow medical practitioners.

1925 Wilshire Boulevard (5).

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

AUSTIN SMITH, M. D., *Secretary.*

FOOD, EPIDERMAL AND OTHER EXTRACTS

(See New and Nonofficial Remedies 1949, p. 2).

The following allergens have been accepted:

HOLLISTER-STIER LABORATORIES, SPOKANE 8, WASH.

Food, Epidermal and Miscellaneous Allergens: All the items in the list are marketed for cutaneous or scratch tests, in dropper applicator vials containing 1 cc., 2 cc and 5 cc. Those items with an asterisk (*) are marketed for intradermal testing and therapeutic use. Intradermal extracts are supplied as rubber-capped vials of 2 cc. and 5 cc. Standardization is by milligrams of total nitrogen except for allergens supplied to be used undiluted. Therapeutic extracts are marketed as treatment sets of four vials containing, respectively, dilutions of 1:10,000, 1:1,000, 1:100 and 1:10 and as single vials of 2 cc., 5 cc., 10 cc. and 20 cc. quantities in any of the aforementioned dilutions.

Foods

Allspice
Almond *
Anchovy
Apple *
Apricot *
Arrowroot *
Artichoke *
Asparagus *
Avocado *
Bacon *
Banana *
Barley *
Bay leaf
Beef *
Beet *
Blackberry *
Blackcap
Black-eyed pea
Black pepper *
Black walnut
Bran
Brazil nut *
Broccoli *
Brussels sprouts *
Buckwheat *
Cabbage *
Calves' liver *
Cantaloupe *
Caraway seed *
Carrot *
Cascara bark
Cashew nut *
Catfish *
Cauliflower *
Celery *
Cheese (American)*
Cherry *
Chestnut
Chicken *
Chicory
Chili pepper
Chives
Chocolate *
Cinnamon *
Citron
Clam *
Cloves *
Cocoa *
Coca-cola
Cocoanut *
Cod fish *
Cods' liver *
Coffee *
Corn *
Crab *
Cranberry *
Crappie fish
Cucumber *
Curley kale
Currant *
Curry powder
Date *
Dill
Duck *
Egg white *
Egg (whole)*
Egg yolk *
Eggplant *
Elk meat
Endive *
English walnut *
Evaporated milk *
Fig *
Filbert *
Flounder *
Frog legs
Garlic *
Gelatin *
Ginger *
Goose *
Gooseberry
Grape *
Grapefruit *
Green pepper *
Haddock *
Halibut *
Herring *
Honey *
Honey dew melon *
Hops *
Horse radish *
Huckleberry *
Juniper berry
Kidney bean *
Kohl-rabi
Lamb *
Leek
Lemon *
Lentil
Lettuce *
Licorice
Lima bean *
Limburger cheese
Lime *
Ling cod
Lobster *
Loganberry
Mackerel *
Malt *
Milk (cow)*
Milk (cow) albumin *
Milk (cow)casein
Milk (cow) whey
Milk (goat)*
Mint *
Mushroom *
Mustard *
Mutton
Navy bean *
Nectarine
Nutmeg *
Oat *
Okra *
Olives (green)
Olives (ripe)*
Onion *
Orange *
Oyster *
Paprika
Parsley *
Parsnip *
Pea *
Peach *
Peanut *
Pear *
Pecan *
Peppermint
Perch
Persimmon
Pickerel
Pike *
Pimento *
Pineapple *
Pistachio
Plum *
Popcorn
Poppy seed
Pork *
Potato *
Prune *
Psyllium seed
Pumpkin *
Quince
Rabbit *
Raddish *
Raisin *
Raspberry *
Red pepper *
Red snapper
Rhubarb *
Rice *
Roquefort cheese *
Rutabaga
Rye *
Sage *
Salmon*
Sardine *
Scallops *
Sea bass *
Sea perch
Sesame seed *
Shad
Shrimp *
Smelt
Sole *
Soy bean *
Spinach *
Squash *
Strawberry *
String bean *
Sugar beet *
Sugar cane *
Sweetbreads
Sweet potato *
Swiss chard
Swiss cheese *
Tangerine
Tapioca *
Tea *
Thyme
Tomato *
Trout *
Tuna fish *
Turkey *
Turmeric
Turnip *
Turnip greens
Vanilla *
Veal *
Watercress
Watermelon *
Wax bean
Wheat *
Whitefish *
Yam
Yeast (baker's)*
Yeast (brewer's)*
Youngberry

Epidermal Allergens

Angora wool *
Beaver
Camel's hair *
Canary feathers
Caracul
Cat hair *
Cattle hair *
Chicken feathers *
Deer hair
Dog hair *
Duck feathers *
Ermine
Feather mixture *
Fox *
Goat hair *
Goose feathers *
Guinea pig hair
Hog hair *
Horse dander *
Hun, stone martin
Kolinsky
Leopard
Marmot
Marten
Mink *
Mohair
Muskrat *
Nutria
Opossum
Persian lamb
Pony
Rabbit hair *
Racoon
Seal(Alaskan)
Seal (Hudson)
Sheep wool *
Skunk
Squirrel

Miscellaneous Allergens

Alfalfa hay
Analine
Bee
Carbon paper
Cedar
Chalk *
Chamois skin
Chicle *
Cocoanut fiber
Cotton *
Cotton linters
Cotton mattress
Cottonseed *
Derris powder
Excelsior
Fir
Flax
Flaxseed*
Glue *
Glue (fish)
Grain mill dust *
Hemp
Henna *
Horse serum *
House dust *
Human hair *
Jute *
Kapok *
Karayagum *
Cleansing tissue *
Leather
Lycopodium *
Moth
Newspaper (plain)*
Newspaper (color)*
Newspaper (roto.)*
Nylon *
Orris root *
Pine (white)
Pine (yellow)
Pyrethrum *
Quince seed *
Rayon *
Rice powder *
Sea moss
Silk *
Sisal *
Smoke (cigar)*
Smoke (cigaret)*
Smoke (tobacco)*
Smoke (mixed)
Snuff
Tobacco *
Tragacanth
Upholstery dust *
Control
Yellow jackets

The extracts of foods, epidermals and miscellaneous allergens, Hollister-Stier, are prepared as follows: All substances are reduced to small particle sizes after those containing moisture are dehydrated at low temperature. To prepare extract for scratch tests and therapeutic use, 1 part of dehydrated material is extracted in 10 parts of a menstruum containing 50 per cent glycerin, 5 per cent sodium chloride and 45 per cent distilled water, with agitation for five days at controlled temperature. The extract is clarified and sterilized by Seitz filtration. Sterility tests in accordance with requirements of the National Institutes of Health are made. The final extract is a 1:10 dilution of the allergen.

To prepare intradermal extracts, the dehydrated material is extracted with buffered saline solution with mechanical agitation for twenty-four hours. The extract is clarified and Seitz filtered. The total nitrogen is determined by the Kjeldahl method, and the extracts are diluted to required strength with sterile buffered saline solution and tested for sterility.

FUNGUS EXTRACTS

(See New and Nonofficial Remedies 1949, p. 9).

The following allergens have been accepted:

HOLLISTER-STIER LABORATORIES, SPOKANE 8, WASH.

Fungus Allergenic Extract: These extracts are marketed for scratch tests in dropper applicator vials of 1 cc., 2 cc. and 5 cc. For intradermal tests 2 cc. and 5 cc. rubber-capped vials are supplied. Therapeutic extracts are marketed in treatment sets of four vials, consisting of dilutions 1:10,000, 1:1,000, 1:100 and 1:10; also, 2 cc., 5 cc., 10 cc. and 20 cc. quantities of any of the aforementioned dilutions are available.

Aschorion schoenleinii
Alternaria
Aspergillus flavus
Aspergillus fumigatus
Aspergillus mix
Aspergillus nidulans
Aspergillus niger
Aspergillus terreus
Botyritis
Cephalosporium cerebriforme
Cephalothecium roseum
Chaetomium globosum
Cladosporium
Epidermophyton inguinale
Fusarium
Helminthosporium
Hormodendrum
Microsporum lanosum
Mold mixed
Monilia albicans
Monilia sitophila
Mucor circinelloides
Penicillium digitatum
Penicillium expansum
Penicillium glaucum
Penicillium mix
Penicillium notatum
Penicillium roseum
Rhizopus
Torula pink
Trichophyton

Fungus extracts, Hollister-Stier, are prepared as follows: The fungi are grown on special mediums, designed to increase spore production, for several weeks. The spores and mycelium are removed, drained of liquid and dried without heat. Ten grams of dried fungus spores and mycelium are added to 100 cc. of a menstruum consisting of 50 per cent glycerin, 5 per cent sodium chloride and 45 per cent distilled water and mixed in a Waring blender. Mechanical agitation is applied for several hours, and extraction is continued for five days at controlled temperature. The extract is clarified and Seitz filtered. Tests for sterility are performed according to the methods of the National Institutes of Health. The final extract is a 1:10 dilution of the dried fungus material. The required dilutions are prepared with buffered saline solution for intradermal extracts, and glycerosaline solution for therapeutic extracts. Sterility tests are made at intermediate points and when the final containers are being filled.

OXIDIZED CELLULOSE

(See New and Nonofficial Remedies 1949, p. 436).

The following dosage form has been accepted:

JOHNSON & JOHNSON, NEW BRUNSWICK, N. J.

Hemo-Pak Hemostatic Absorbable Gauze Sponge (8 ply): 3 by 3 inches.

U. S. patent 1,939,235 and 2,232,990.

PYRIDOXINE HYDROCHLORIDE (See New and Nonofficial Remedies 1949, p. 558).

The following dosage forms have been accepted:

INTERNATIONAL VITAMIN DIVISION, IVES-CAMERON COMPANY, INC., NEW YORK 16

Tablets Pyridoxine Hydrochloride: 25 mg. and 50 mg.

LINCOLN LABORATORIES, INC., DECATUR, ILL.

Solution Pyridoxine Hydrochloride: 50 mg. per cc. in 10 cc. vials. Preserved with 0.5 per cent chlorobutanol.

THE UPJOHN COMPANY, KALAMAZOO 99, MICH.

Tablets Pyridoxine Hydrochloride: 50 mg.

PENICILLIN FOR PARENTERAL USE IN AQUEOUS SOLUTION (See New and Nonofficial Remedies 1949, p. 150).

The following dosage forms have been accepted:

R. E. DWIGHT AND CO., DES MOINES 9, IOWA

Crystalline Sodium Penicillin G: 100,000, 200,000, 500,000 and 1,000,000 unit vials.

PREMO PHARMACEUTICAL LABORATORIES, INC., SOUTH HACKENSACK, N. J.

Crystalline Potassium Penicillin G: 100,000, 200,000, 500,000 and 1,000,000 units in 20 cc. vials.

PENICILLIN FOR PARENTERAL USE FOR PROLONGED ACTION (See New and Nonofficial Remedies 1949, p. 153).

The following dosage forms have been accepted:

ABBOTT LABORATORIES, NORTH CHICAGO, ILL.

Crystalline Procaine Penicillin G in Aqueous Suspension: 300,000 units (packaged with or without 1 cc. ampul of water for injection), 1,500,000 and 3,000,000 unit vials.

R. E. DWIGHT AND CO., DES MOINES 9, IOWA

Crystalline Procaine Penicillin G in Oil: 300,000 units per cc. in peanut oil with 2 per cent W/V aluminum monostearate in 10 cc. vials.

PENICILLIN FOR ORAL ADMINISTRATION (See New and Nonofficial Remedies 1949, p. 156).

The following dosage forms have been accepted:

ABBOTT LABORATORIES, NORTH CHICAGO, ILL.

Soluble Tablets Crystalline Potassium Penicillin G: 50,000 units.

COMMERCIAL SOLVENTS CORPORATION, NEW YORK 17

Soltabs Crystalline Potassium Penicillin G: 100,000 units.

PENICILLIN FOR INHALATION THERAPY (See New and Nonofficial Remedies 1949, p. 157).

The following dosage form has been accepted:

PREMO PHARMACEUTICAL LABORATORIES, INC., SOUTH HACKENSACK, N. J.

Nebutabs Crystalline Sodium Penicillin G: 100,000 units. For use in the preparation of solutions for nebulization. Packaged with or without an oral nebulizer or with a nasal nebulizer.

HUMAN IMMUNE GLOBULIN-U. S. P. (See New and Nonofficial Remedies 1949, p. 473).

The following dosage form has been accepted:

PITMAN-MOORE COMPANY, DIVISION OF ALLIED LABORATORIES, INC., INDIANAPOLIS 6

Immune Serum Globulin (Human): 2 cc. and 10 cc. vials. Preserved with ethylmercurithiosalicylate 1:10,000.

METHAMPHETAMINE HYDROCHLORIDE (See New and Nonofficial Remedies 1949, p. 227).

The following dosage forms have been accepted:

THE UPJOHN COMPANY, KALAMAZOO 99, MICH.

Elixir Desoxyephedrine Hydrochloride: 0.66 mg. per cc. in 500 cc. bottles.

Tablets Desoxyephedrine Hydrochloride: 5 mg.

PERTUSSIS VACCINE ALUM PRECIPITATED (See New and Nonofficial Remedies 1949, p. 506).

The following dosage form has been accepted:

THE NATIONAL DRUG COMPANY, PHILADELPHIA 44

Pertussis Vaccine (Alum Precipitated): 300,000 million *H. pertussis* per cc. in 6 cc. vials (four immunizations). Preserved with sodium ethylmercurithiosalicylate 1:10,000.

VITAMIN D_2 (See New and Nonofficial Remedies 1949, p. 565).

The following dosage forms have been accepted:

WINTHROP-STEARNS, INC., NEW YORK 13

Capsules Drisdol with Vitamin A: 5,000 U. S. P. units of vitamin A and 1,000 U. S. P. units of vitamin D in corn oil.

Solution Drisdol with Vitamin A: 50,000 U. S. P. units of vitamin A and 10,000 U. S. P. units of vitamin D per Gm., in sesame oil in 10 cc. and 50 cc. bottles.

U. S. patent 2,030,792; U. S. trademark 333,661.

TESTOSTERONE PROPIONATE-U. S. P. (See New and Nonofficial Remedies 1949, p. 407).

The following dosage form has been accepted:

PREMO PHARMACEUTICAL LABORATORIES, INC., SOUTH HACKENSACK, N. J.

Solution Testosterone Propionate with 3% Benzyl Alcohol: 25 mg. and 50 mg. per cc. in sesame oil in 10 cc. vials. Preserved with 0.1 per cent propylparaben.

THIAMINE HYDROCHLORIDE-U. S. P. (See New and Nonofficial Remedies 1949, p. 549).

The following dosage forms have been accepted:

GOLD LEAF PHARMACAL CO., NEW ROCHELLE, N. Y.

Solution Thiamine Hydrochloride: 10 mg. per cc. in 10 cc. vials. Preserved with 0.5 per cent chlorobutanol.

Tablets Thiamine Hydrochloride: 1 mg., 5 mg. and 10 mg.

THONZYLAMINE HYDROCHLORIDE (See New and Nonofficial Remedies 1949, p. 24).

The following dosage form has been accepted:

WYETH, INCORPORATED, PHILADELPHIA 3

Cream Neohetramine Hydrochloride 2%: 28.3 Gm. collapsible tubes.

U. S. patent 2,465,865 (Licensed by Nepera Chemical Co., Inc.); U. S. trademark 501,673 (Registered by Nepera Chemical Co., Inc.).

PENICILLIN FOR TOPICAL APPLICATION (See New and Nonofficial Remedies 1949, p. 158).

The following dosage form has been accepted:

E. R. SQUIBB & SONS, NEW YORK 22

Chewing Troches Potassium Penicillin G: 20,000 units.

Council on Foods and Nutrition

ACCEPTED FOODS

The following product has been accepted as conforming to rules of the Council. JAMES R. WILSON, M.D., *Secretary.*

Special Milk Products, Inc., Los Angeles.

HI-PRO consists of a mixture of milk solids, whole and nonfat, standardized with milk proteins to give a final product containing approximately 14 per cent butterfat and 41 per cent milk protein.

Analysis (submitted by manufacturer).—Protein 41 per cent, fat 14 per cent, lactose 35 percent, minerals 6.5 per cent and moisture 3.0 per cent.

Calories.—4.3 per gram; 122 per ounce.

Vitamin Content	*Per Hundred Grams*
Vitamin A	425 I.U.
Thiamine	0.23 mg.
Riboflavin	1.26 mg.
Nicotinic acid	0.7 mg.

Use.—Designed for use in infant feeding where a high protein, low fat food is indicated.

Swift and Company, Chicago.

SWIFT'S BROOKFIELD POWDERED WHOLE MILK, VITAMIN D FORTIFIED, a powdered whole milk with vitamin D added in the form of irradiated ergosterol dispersible concentrate in amounts sufficient to produce a minimum of 400 U. S. P. units of vitamin D per 4 ounces (113.4 Gm.) of whole milk powder.

Analysis (submitted by manufacturer).—Butterfat 28.00 per cent; protein 26.20 per cent; lactose 38.00 per cent; minerals 5.80 per cent, and moisture 2.00 per cent.

Calories.—5.13 per gram; 145.71 per ounce.

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SATURDAY, NOVEMBER 12, 1949

AGING AND CHRONIC ILLNESS

A study of aging and chronically ill patients in the Birmingham Hospital region in England has been reported in two Lumleian Lectures by Dr. A. P. Thomson.[1] This study reveals with discerning clarity some of the problems associated with the care of persons who become less active because of advancing age, chronic illness and even social dependence. It presents a perplexing problem, for which, however, there is hope of solution through better understanding and more effective utilization of medical services, particularly those that can be supplied by general practitioners.

Dr. Thomson was impressed particularly during his study with the profound apathy of many of the patients. They seldom spoke, they rarely moved and they seemed to lack interest in all normal activities. It was not difficult to obtain information from them, but they did not reveal any emotion when they were recalling their past lives regardless of the excitement or adventure in these lives. Apparently food was their main interest. Men and women appeared to be alike in their apathy, although the women were cleaner and more responsive. The most active movement occurred when there was an emotional outbreak and when attempted pilfering was discovered. In the wards where the patients were more active some gambled almost feverishly and others who had certain privileges found ingenious methods for obtaining money for alcoholic sprees. Eventually even the more active developed habits which caused the observer to wonder whether "the process of decay is inevitable, or whether it is caused or accelerated by the apathy surrounding the chronic beds."

The survey was undertaken to determine whether patients could be returned to their homes if improvements in personnel and equipment and the institution of standards comparable to those in good general hospitals were adopted. Dr. Thomson concluded that the majority would not benefit sufficiently to permit return to their own homes. He offers three reasons for his conclusion: "First, nearly all the patients are the victims of pathological conditions which are either degenerative or genetic in their origin and beyond the scope of therapeutics in its present stage of development. Secondly, long confinement to bed without occupation or diversional therapy, without massage and passive movement in hospitals so grossly understaffed that independent activity of any kind has been discouraged for fear of accident, has led to rapid deterioration in the shape of contractures, deformities of the feet, and the development of incontinence. Thirdly, and probably the most important, is the subtle disintegration of human personality that is so common in these patients. Many literally do not wish to leave the beds in which they have lain so long . . . they did not wish anything to happen; they wished to be left to perish quietly." Thus, he believes that "most of the inmates in the chronic wards must be regarded as a sad inheritance from a long period of neglect—like many of the deteriorated patients in the mental hospitals—and that the opportunity for effective treatment has long since been lost."

One third of all patients were unwilling to leave the infirmary. The longer they remained the more unwilling they were to leave. In part the reluctance was due to the disintegration of their homes. Other factors that may have exerted some influence were freedom from want, fear of unemployment, lack of companionship and fear of tyranny. Inherent instincts of survival must have been sufficient for many of the inmates.

The care of those who are chronically ill has posed for many years problems for the medical profession and other interested groups. It has been and is being studied in the community, at the state level and at the national level. More recently even representatives of countries spread throughout the world have met to discuss aging and chronic illness. The interest of the American Medical Association in this problem long has been evident in its various activities. The need for caring for and rehabilitating aged persons and those with chronic disease is emphasized in the twelve point program of the American Medical Association for the advancement of medicine and public health. A Commission on Chronic Illness[2] has been formed as a result of joint efforts by the American Medical Association, the American Hospital Association, the American Public Health Association and the American Public Welfare Association. Office space has been provided at the headquarters of the American Medical Association for the commission which represents the voluntary health agencies, government agencies and the public.[3]

Modern medical advances have resulted in the saving of innumerable lives, have lessened periods of convalescence and have aided immeasurably many who might otherwise have been confined to the limitations of

1. Thomson, A. P.: Problems of Ageing and Chronic Sickness, Brit. M. J. **2**: 243 (July 30) 1949; ibid. **2**: 300 (Aug. 6) 1949.

2. Aid for Chronic Illness, editorial, J. A. M. A. **139**: 649 (March 5) 1949.

3. Commission on Chronic Illness, organization section, J. A. M. A. **140**: 631 (June 18) 1949.

invalidism. At the same time, however, the life span of populations has been increasing steadily. There are many and varied problems associated with aging and chronic illness. Solutions to these problems rest to a large extent with those who donate time, experience, equipment and money. Enthusiasm and active participation must be created at the local community level, as it is here where the personal touch is possible.

ANGIOCARDIOGRAPHY

Important contributions to angiocardiography have been made by Forssman; Moniz, Carvalho and Lima; Conte and Costa; Castellanos, Pereiras and Garcia, and Robb and Steinberg. Robb and Steinberg [1] in 1938 reported a practical method of visualizing the chambers of the heart, the pulmonary circulation and the great blood vessels. The method consists of causing opacity of the chambers of the heart and the blood vessels within the thorax and of making a roentgenographic examination of these structures at the moment the opacity occurs. Dotter and Steinberg [2] in 1949 reported on 1,000 patients subjected to angiocardiography without a fatality. The usual reaction of a patient, according to these authors, consists of a feeling of mild heat starting in the chest and neck and spreading throughout the body, followed thirty to forty-five seconds after the injection by a throbbing frontal headache, which is apparently associated with a mild elevation of blood pressure and which subsides spontaneously in five to ten minutes. Weakness, flushing, pallor and thirst were often noted. Except for chemical thrombosis of the injected vein in 30 to 40 per cent of the patients, late reactions were not observed. The method of contrast cardiovascular visualization was found to be of value in the diagnosis of coarctation of the aorta; tetralogy of Fallot and related lesions; isolated pulmonary artery stenosis; anomalous pulmonary veins; aneurysms, congenital and acquired; pericardial effusion; uncomplicated syphilitic aortitis; mediastinal tumors, and bronchogenic carcinoma. The method also has been important in the development of better understanding of other abnormal conditions, such as patent ductus arteriosus; septal defects; hypertensive, arteriosclerotic, rheumatic and pulmonary heart disease; constrictive pericarditis, and chronic pulmonary disease. Angiocardiography permits adequate demonstration of the anatomic features of the aorta and is valuable in the preoperative study of diseases of this blood vessel. Patent ductus arteriosus can be diagnosed by physical examination and confirmed by cardiac catheterization. Angiocardiography in this condition demonstrates elevation and enlargement of the left branch of the pulmonary artery and often reveals a dilatation of the aorta at the site of the origin of the duct. In tetralogy of Fallot the method reveals a simultaneous opacity of the aorta and the pulmonary artery, simultaneous opacity of a large right and a small left ventricle, an area of stenosis in the pulmonary conus or artery and usually a small, poorly filled pulmonary arterial tree.

The development of surgical methods of treatment of congenital heart disease stresses the desirability of more accurate methods of diagnosis. Combined angiocardiography and cardiac catheterization have contributed much toward a more accurate diagnosis of many congenital cardiac anomalies. Dotter and Steinberg [2] stress that many modifications of the method have been devised recently and employed to obtain serial records of the cardiovascular structures. Cineroentgenography, multiple cassette changers and automatic photoroentgen methods have been employed with considerable success. The ideal device, according to these authors, would be one which would permit angiocardiographic recording of serial, direct, high quality teleroentgenograms of the chest made at rapid intervals with short electrocardiographically controlled exposures. Simultaneous teleroentgenograms in two projections would give a two dimensional study with a single injection and permit volumetric determinations of heart chambers and vessels.

1. Robb, G. P., and Steinberg, I.: A Practical Method of Visualization of the Heart, the Pulmonary Circulation and the Great Blood Vessels in Man, J. Clin. Investigation **17**: 507, 1938.
2. Dotter, C. T., and Steinberg, I.: Clinical Angiocardiography: A Critical Analysis of the Indications and Findings, Ann. Int. Med. **30**: 1104 (June) 1949.

Current Comment

INSULIN AND TISSUE PROTEIN

The metabolism of protein is influenced by the metabolism of carbohydrate. After the discovery of insulin, Janney [1] conducted experiments from which he could show insulin causes a decrease in the urinary nitrogen. He suggested, "It seems possible that carbohydrate metabolites are synthesized into the protein molecule by the aid of insulin." At the same time, Weichmann [2] demonstrated in normal and diabetic subjects that insulin effects a decrease in the amino acid nitrogen of venous blood. The depressing effect of insulin on the amino acid level of the blood was confirmed in man and in the rat, rabbit and dog.[3] Because of the role of the liver in protein metabolism, this organ might be assumed to be implicated in the foregoing phenomenon. However, using eviscerated animals, Mirsky [4] showed that the amino acid level of the blood remains normal for long periods following the injection of glycine and that the subsequent administration of insulin causes a decided drop in the blood amino acid concentration. The elevated level of amino nitrogen following functional hepatectomy in the rat was retarded by the injection of insulin in other experi-

1. Janney, N. W., and Shapiro, I.: Rôle of Insulin in Protein Metabolism, Arch. Int. Med. **38**: 96 (July) 1926.
2. Weichmann, E.: Deutsch. Arch. f. klin. Med. **150**: 186, 1926.
3. Kerr, S. E., and Krikorian, V. H.: J. Biol. Chem. **81**: 421, 1926. Luck, J. M.; Morrison, G., and Wilbur, L. F.: Ibid. **77**: 151, 1928. Harris, M. M., and Harris, R. S.: Proc. Soc. Exper. Biol. & Med. **64**: 471, 1947.
4. Mirsky, I. A.: Am. J. Physiol. **124**: 569, 1928.

ments.[5] Thus the liver would not appear to play a primary part in the withdrawal of amino acids from the blood under the influence of insulin. The observation of Lotspeich [6] indicates that the synthesis of muscle protein from the amino acids of the blood occurs after insulin administration. He compared the pattern of concentration of the ten essential amino acids withdrawn from the blood after insulin is administered with the pattern of concentration following hydrolysis of the protein in a biopsy sample of muscle tissue from the same animal, and found an impressive similarity between the relative concentrations of amino acids from the two sources. This suggests that one action of insulin is the promotion of synthesis of muscle protein from amino acids in the blood. Such observations reveal the many functions of insulin and serve to stimulate interest in and respect for its potential physiologic activity.

REMISSIONS IN ARTHRITIS

Remissions in arthritis may occur after the use of a variety of therapeutic agents, such as gold therapy, hyperthermia with typhoid vaccine, massive doses of activated ergosterol, bismuth therapy, administration of cinchophen or foreign protein and bee venom therapy. Hench [1] reemphasized what had been noted by several earlier observers, notably by Still and by Wishart, that hepatic damage with, and occasionally without, jaundice is decidedly beneficial to patients with arthritis. He stated that the future outlook for patients with chronic arthritis is decidedly hopeful and that within the body of patients who have even the severest arthritis powerful corrective forces lie dormant which merely await the proper stimulation. Archer,[2] in a more recent publication, advances the hypothesis that a potent denominator for remissions in cases of arthritis is present when the patients become pregnant or jaundice develops and that the denominator is hepatic damage and/or a dysfunction. The same hypothesis, in his opinion, would explain the remissions observed in patients with arthritis after the use of gold salts, cinchophen, bismuth compounds, fever therapy, viosterol in massive doses and other hepatotoxic drugs. He mentions six biochemical factors present in pregnancy which operate also in hepatocellular and extrahepatic obstructive jaundice. These biochemical changes, for the most part, are the result of hepatic damage and dysfunction, and the common biochemical denominators, singly or in combination, may possess antirheumatic properties. Archer describes a method of approach which consists of the simultaneous administration of gold salts and large doses of viosterol to produce a mild toxic hepatitis, the administration of these agents being carefully controlled by serial tests of hepatic and renal function. Hench, Kendall, Slocumb and Polley [3] reasoned that the antirheumatic substance X might be an adrenal hormone. The result of this reasoning is the discovery of the adrenal cortex hormone called compound E and of the adrenocorticotropic hormone commented on in a recent editorial [4] in THE JOURNAL.

5. Frame, E. G., and Russel, J. A.: Endocrinology **39**: 420, 1946.
6. Lotspeich, W. D.: J. Biol. Chem. **179**: 175, 1949.

1. Hench, P. S.: The Advantages of Hepatic Injury and Jaundice in Certain Conditions, Notably the Rheumatic Diseases, M. Clin. North America **24**: 1209 (July) 1940.
2. Archer, B. H.: Clinical and Biochemical Study of Remissions in Nonspecific Arthritis: Report of a Case, Arch. Int. Med. **84**: 361 (Sept.) 1949.
3. Hench, P. S.; Kendall, E. C.; Slocumb, C. H., and Polley, H. F.: The Effect of "Hormone of the Adrenal Cortex (17-Hydroxy-11-Dehydrocorticosteron... Compound E) and of Pituitary Adrenocorticotropic Hormone on Rheumatoid Arthritis, Proc. Staff Meet., Mayo Clin. **24**: 181 (April 13) 1949.

TYROTHRICIN AND ANOSMIA

Nasal medication with vasoconstrictors and antibacterial agents has a useful although limited application, but many have assumed mistakenly that most of the wide variety of nasal preparations offered for sale are essentially harmless and can be used freely for nasal discomforts. That many such preparations are far from innocuous has been shown by the severe reactions reported to follow instillation of the sodium salts of various sulfonamide drugs and the more recent reports of severe local effects from the prolonged use of vasoconstrictors. Seydell and McKnight [1] reported that the use of tyrothricin preparations intranasally has caused olfactory disturbances in at least 7 patients, consisting of complete anosmia or a continuous sense of "smelling bad odors." Although this disability is temporary in some patients, it has lasted for more than a year in others. The amounts of tyrothricin used and the duration of medication required to produce these untoward effects were not excessive. This report again emphasizes the necessity for thorough toxicologic study of preparations for intranasal use, particularly the local effects on mucous membranes, blood vessels and nervous tissue. It also emphasizes the necessity for cautioning patients against promiscuous use of nose drops.

THIRD GENERAL ASSEMBLY OF WORLD MEDICAL ASSOCIATION

Elsewhere in this issue appears a brief account of the proceedings of the Third General Assembly of The World Medical Association. One of the outstanding accomplishments was the adoption of an International Code of Ethics. This code, which had been submitted previously to all member associations, was adopted unanimously with only minor amendments. Ten national medical associations had previously approved the code. Among these is the American Medical Association. The World Health Organization is reported to be also considering the preparation of an international code. This is not a proper function of the organization; it is a governmental body and should not attempt to draft a code of ethics for professional bodies. The World Medical Association, being composed of national medical associations and representing the practicing physicians, is in a much better position to draft any acceptable code for physicians. Acceptance of the World Medical Association Code by ten national medical associations indicates that the association can speak for its member physicians with authority.

4. Adrenal Cortical Hormone for Arthritis, editorial, J. A. M. A. **139**: 1274 (April 30) 1949.

1. Seydell, E. M., and McKnight, W. P.: Disturbances of Olfaction Resulting from Intranasal Use of Tyrothricin, Arch. Otol. **47**: 465 (April) 1948.

ORGANIZATION SECTION

Official Notes

THE SCIENTIFIC EXHIBIT, SAN FRANCISCO SESSION

Each Section of the Scientific Assembly has elected a representative to the Scientific Exhibit for the San Francisco Session, June 26-30, 1950.

Section on Internal Medicine, Dr. Wesley W. Spink, University Hospital, Minneapolis 14.

Section on Surgery, General and Abdominal, Dr. Walter G. Maddock, 250 East Superior Street, Chicago.

Section on Obstetrics and Gynecology, Dr. Frederick H. Falls, 1853 West Polk Street, Chicago 12.

Section on Ophthalmology, Exhibit Committee, Dr. Georgiana D. Theobald, 715 Lake Street, Oak Park, Ill.; Dr. Donald J. Lyle, 601 Union Trust Building, Cincinnati 2, and Dr. Phillips Thygeson, San Jose, Calif.

Section on Laryngology, Otology and Rhinology, Dr. James B. Costen, 722 Beaumont Medical Building, St. Louis.

Section on Pediatrics, Dr. Albert V. Stoesser, 412 Delaware Street, S.E., Minneapolis.

Section on Experimental Medicine and Therapeutics, Dr. Robert W. Wilkins, Evans Memorial Hospital, 65 East Newton Street, Boston.

Section on Pathology and Physiology, Dr. J. J. Moore, 55 East Washington Street, Chicago.

Section on Nervous and Mental Diseases, Dr. A. B. Baker, University of Minnesota Medical School, Minneapolis.

Section on Dermatology and Syphilology, Dr. Francis W. Lynch, 350 St. Peter Street, St. Paul.

Section on Preventive and Industrial Medicine and Public Health, Dr. Paul A. Davis, 1436 Delia Avenue, Akron 2, Ohio.

Section on Urology, Dr. John H. Morrissey, 40 East Sixty-First Street, New York; Dr. Roger W. Barnes, 1216 Wilshire Boulevard, Los Angeles, and Dr. W. W. Scott, Brady Urological Institute, The Johns Hopkins Hospital, Baltimore 5.

Section on Orthopedic Surgery, Dr. Robert J. Joplin, 1180 Beacon Street, Boston 46.

Section on Gastro-Enterology and Proctology, Dr. J. P. Nesselrod, 636 Church Street, Evanston, Ill., and Dr. Everett D. Kieffer, The Lahey Clinic, 605 Commonwealth Avenue, Boston.

Section on Radiology, Dr. S. W. Donaldson, 326 North Ingalls Street, Ann Arbor, Mich.

Section on Anesthesiology, Dr. Scott M. Smith, 325 Eighth Avenue, Salt Lake City.

Section on General Practice, Dr. Richard Mills, 918 East Los Olas Boulevard, Fort Lauderdale, Fla.

Section on Diseases of the Chest, Dr. Edwin R. Levine, Michael Reese Hospital, Twenty-Ninth Street and South Ellis Avenue, Chicago.

Section on Physical Medicine and Rehabilitation, Dr. Walter J. Zeiter, Euclid Avenue at Ninety-Third Street, Cleveland.

Application blanks for space in the Scientific Exhibit are now available and may be obtained from the Section representatives or the Director, Scientific Exhibit, American Medical Association, 535 North Dearborn Street, Chicago 10.

THE WORLD MEDICAL ASSOCIATION

The Third General Assembly of the World Medical Association was held at the British Medical Association House in Tavistock Square, London, Oct. 10-15, 1949. Delegates from 28 countries were present. Observers from UNESCO, the World Health Organization, the International Labor Office, nine international medical bodies and the United States Committee were also in attendance.

Dr. Charles Hill of Great Britain was installed as president. Dr. Hill, in the name of the association, then presented a gavel to Prof. Marquis for his services as president for two years. The gavel was of rosewood. On the center of the head was a silver band, suitably inscribed.

The Asociación Médica Nacional of Panama and the Colegio Médico de El Salvador were elected to membership. This makes a total of 42 nations which are now represented in the World Medical Association.

Two minor amendments to the by-laws were adopted. These pertained to proxy voting and to the qualifications of delegates.

The reports of the treasurer and of the United States Committee were received and approved. The assembly then adopted the following resolution:

"*Resolved:* That the thanks of the General Assembly be accorded to the United States Committee, the American Medical Association and our medical colleagues in the United States who have contributed so generously to the World Medical Association."

The annual report of the Council to the General Assembly was received and approved. This included the recommendation that three studies be undertaken; namely, pharmaceutical practices, hospitals and a supplement to the status of the medical profession.

The General Assembly adopted a design for the emblem of the World Medical Association. This emblem consists of a globe, blue on white, on which is superimposed the ancient insignia of medicine. Around the periphery of the globe is the name of the association in Latin, "Societas Mundi Medica," and the date of foundation, in Roman numerals, A.D. MCMXLVII (1947).

Reports were received from the assistant secretaries for Asia, Europe and Latin America relative to developments and conditions within their respective areas.

The General Assembly adopted an International Code of Ethics with the provision that it be left to national medical associations to modify the wording for use within their respective countries, provided that it conform to the principles of the code. This code is as follows:

"A doctor must always maintain the highest standards of professional conduct.

"A doctor must not allow himself to be influenced merely by motives of profit. The following practices are deemed unethical:

"1. Any self advertisement except such as is expressly authorized by the national code of medical ethics.

"2. Taking part in any plan of medical care in which the doctor does not have professional independence.

"3. To receive any money in connection with services rendered to a patient other than the acceptance of a proper professional fee, or to pay any money in the same circumstances without the knowledge of the patient.

"Under no circumstances is a doctor permitted to do anything that would weaken the physical or mental resistance of a human being except from strictly therapeutic or prophylactic indications imposed in the interest of the patient.

"A doctor is advised to use great caution in publishing discoveries. The same applies to methods of treatment whose value is not recognized by the profession.

"When a doctor is called upon to give evidence or a certificate, he should only state that which he can verify.

"The doctor must always bear in mind the importance of preserving human life from the time of conception until death.

"A doctor owes to his patient complete loyalty and all the resources of his science. Whenever an examination or treatment is beyond his capacity he should summon another doctor who has the necessary ability.

"A doctor owes to his patient absolute secrecy on all which has been confided to him or which he knows because of the confidence entrusted to him.

"A doctor must give the necessary treatment in emergency, unless he is assured that it can and will be given by others.

"A doctor ought to behave to his colleagues as he would have them behave to him.

"A doctor must not entice patients from his colleagues.

"A doctor must observe the principles of 'The Declaration of Geneva' approved by the World Medical Association."

Reports were received from the editor of the *World Medical Association* Bulletin and the Committee on Ways and Means of Securing Publicity for the World Medical Association.

The Committee on Postgraduate Medical Education presented the report of a study on the current trend in postgraduate medical education and specialist training in thirty-two member countries. This study reports such information as the existence and establishment of standards for specialists, period and type of training, prerequisites, examinations, certificates, schools, faculties, recognized specialties and opportunities for advanced education for physicians not interested in becoming specialists. After consideration of this report certain recommendations were adopted by the General Assembly, including recommendation for continuing study.

Reports were received from the liaison officers of the following organizations: World Health Organization, International Labor Office, International Red Cross and UNESCO. Dr. M. H. Hafezi, observer from the World Health Organization, greeted the General Assembly in the name of his organization and expressed the hope that closer cooperation between the World Health Organization and the World Medical Association would develop.

Dr. Manuel de Viado, speaking for the International Labor Office, expressed the desire of his organization for cooperation and an exchange of information and views. Dr. de Viado stated that the International Labor Office was in favor of protection of freedom of choice of doctors and of doctors being represented on boards which consider medical aspects of social security. He further stated that he was sure both organizations had the same aims but might differ in the method of attaining them.

Greetings from the director general of UNESCO were conveyed by Dr. I. M. Zhukova. Dr. Zhukova urged the desirability of closer cooperation between the two bodies and suggested that the Secretary General should contact UNESCO with a view to exploring the possibilities of joint action.

The Committee on Social Security presented a factual report of a study of national schemes of social security in twenty-four member countries. In the course of debate, the facts relative to social security plans in France, Belgium, Canada, Sweden, Australia, South Africa, Switzerland, India and the United States of America were presented. (Details of this discussion will be published by the World Medical Association). The General Assembly adopted certain recommendations relative to the continued activity of the Committee on Social Security.

The General Assembly confirmed the selection of the United States of America as the venue of the 1950 session. Dr. Elmer Lee Henderson of Louisville, Ky., was unanimously elected president-elect for the year 1949-1950, and Dr. R. L. Sensenich of South Bend, Ind., recent past President of the American Medical Association, was elected a member of the Council of the World Medical Association to succeed Dr. Henderson. Dr. Paul Cibrie (France), Dr. Dag Knutson (Sweden) and Dr. J. A. Pridham (Great Britain) were reelected members of Council for the ensuing three years.

Canada, Cuba and Greece presented invitations to hold the 1952 General Assembly in their countries. The selection of the venue was referred to the Council for decision.

HEALTH EDUCATION AWARD

The National Education Association and the American Medical Association have received the award of the American Academy of Physical Education for the outstanding school health publication of the past year. The academy, an organization of leaders in the field of physical education, made the award for the work of the Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association for its revision of the book "Health Education."

More than 100 specialists in the field of school health, including physicians and educators, contributed to the revised edition, the fourth of a report first published in 1924 as a guide for teachers and educators and dedicated to the school children and youth of America. Editor of the revision was Dr. Charles C. Wilson, professor of education and public health, Yale University, New Haven, Conn.

The Joint Committee is composed of five physicians named by the American Medical Association and five educators selected by the National Education Association. In existence since 1911, its chief function is the publication of material to improve school health education and the promotion of acceptable standards of school health services. Dr. George M. Lyon, Washington, D. C., is chairman of the committee. Mabel E. Rugen, Ph.D., professor of public health at the University of Michigan, Ann Arbor, is vice chairman, and Fred V. Hein, Ph.D., Bureau of Health Education, American Medical Association, is secretary.

FRATERNITY AND ALUMNI REGISTRATION AT SAN FRANCISCO SESSION

Applications for registration space for fraternity and alumni organizations at the San Francisco session of the American Medical Association, June 26 to 30, 1950, should be submitted to Dr. Walton Van Winkle Jr., American Medical Association, 535 North Dearborn Street, Chicago 10, before Jan. 15, 1950. Application forms will be sent on request.

Notice of luncheons, dinners or other functions must be received before April 1, 1950 in order to be announced in the official program of the session and in the Convention Issue of THE JOURNAL. Forms for submission of such notices are included with the forms for application for registration space.

Washington Letter

(From Our Regular Correspondent)

Nov. 7, 1949.

Health Legislation of First Session Summarized

One major national health bill passed by Congress and signed by the President and four others passed by the Senate only—these were the highlights of the first session of the 81st Congress, which ended on October 19. When the second session convenes in January, consideration of scores of pending bills will be resumed.

Amendment of the Hill-Burton hospital construction act was the sole item of nationally applicable legislation to go through both houses and be approved by the White House. It doubles the federal contribution to $150,000,000 annually, extends the subsidy program to June 30, 1955 and authorizes $1,200,000 in grants annually to medical schools, hospitals and other institutions to conduct research designed to improve efficient utilization of hospital facilities.

Passed by the Senate only and awaiting House action in 1950 are bills expanding federal support of local public health units, introducing a new system of government aid to medical schools and to students eligible for financial assistance, increasing federal aid to medical research and inaugurating a national plan of subsidizing school health services. In the same category is the National Science Foundation bill, which makes special provision for coordination and stimulation of fundamental research in the biologic and medical sciences.

A bill passed by Congress but vetoed by the President on October 31 would have furnished automobiles without cost to

certain veterans, depending on the character of their physical disability, of World Wars I and II.

Other measures of a specialized nature which were approved by the President following enactment by Congress included the following:

Authorization of $75,000 annually to defray expenses incidental to promotion of National Employ the Physically Handicapped Week.

Inclusion of aureomycin, bacitracin and chloramphenicol (chloromycetin®) among the drugs which must be certified by the Food and Drug Administration before they are placed on the market.

Granting of an additional $1,500,000 for services to crippled children.

Amendment of tariff laws so as to exempt from duty payments those artificial limbs and braces which are imported not for resale but for personal use.

Amendment of military statutes for the purpose of abolishing promotion inequities affecting members of the Army Medical Service Corps and, in the case of the Navy, to authorize retention on active duty—beyond the normal retirement date—of captains in the Medical Corps and Dental Corps whose continued services are considered essential.

Authorization of a $1,500,000 contribution to help construct a county hospital at Albuquerque, N. Mex., on condition that at least 100 beds are set aside for care of Indian wards of the government. The hospital is to be erected on land transferred to Bernalillo County by the federal government.

Authorization of $375,000 from the treasury to build a small hospital at St. Lawrence, Newfoundland, in appreciation of aid given by townsmen to survivors of the Navy warships *Truxton* and *Pollux*, which were wrecked in 1942.

Increased salary scales for physicians, dentists and nurses in the Department of Medicine and Surgery, Veterans Administration.

Extension to a greater number of disabled war veterans of special benefits enabling them to receive up to $10,000 for construction of housing especially adapted to occupants who must use wheel chairs, limb braces or crutches.

Comparatively minor measures which passed the Senate in 1949 and which are awaiting House action in 1950 include:

Administrative strengthening of the dental departments of Army and Air Force.

Holding of a national survey of chronic illness by the United States Public Health Service.

Authorization of the Veterans Administration to detail professional personnel in the Department of Medicine and Surgery to hospitals, medical schools and other institutions giving postgraduate instruction for longer periods of time than is permitted at present.

Liberalization of procedures for admittance of patients to federal hospitals at Fort Worth, Texas, and Lexington, Ky. (narcotics addiction) and St. Elizabeths Hospital (mental) in Washington, D. C.

Exemption of Sister Elizabeth Kenny from complying with certain immigration law requirements.

Directing the United States Public Health Service to widen its research into family aspects of chronic illness, a long range project now confined to the population of Washington County and Hagerstown, Md.

Prescribing means for disposing of federal rapid treatment centers which have been administered by the veneral disease division of the United States Public Health Service.

Senator Humphrey's Position on Health Program Clarified

Advocates of compulsory health insurance were disturbed by press reports late in October that Senator Hubert H. Humphrey (Democrat, Minnesota) was deserting their cause. The newspaper accounts were based on an interview of the Senator in Minneapolis shortly after adjournment of Congress.

In Washington on October 27, Senator Humphrey stated that his position had been misinterpreted. He emphasized that he is still a supporter of the Administration national health program, as set forth in the Thomas-Murray-Humphrey-Dingell bill (S. 1679). Four of the bill's seven titles have been passed by the Senate, he observed: Aid to medical education, hospital expansion, subsidization of local public health units and expansion of federal medical research. As for the controversial seventh title—compulsory health insurance—Senator Humphrey stated that he feels further public hearings should be held on this question in order to achieve a blueprint of operation that would be more sound, administratively, than is provided for by the language of S. 1679.

Aniseikonia Patents Dedicated to Public

The United States Patent Office has announced that 25 patents relating to detection, measurement and correction of aniseikonia have been dedicated to the general public by Hanover Institute, Hanover, N. H. The institute, a privately endowed group formerly known as the Dartmouth Eye Institute, was described by the Patent Office as pioneers in aniseikonia research and in development of technics for its correction. The methods and apparatus covered by the 25 patents are now available for commercial and professional utilization. They are said to represent thirty years of clinical experimentation at the Hanover clinic. The patents include such heretofore unpublished data as details of apparatus construction, specific methods of testing for aniseikonia and psychophysiologic background material. Copies of the patents are obtainable from the U. S. Patent Office, Washington 25, D. C., at 25 cents each.

Ewing Avoids Involvement in Humphrey Incident

Addressing the CIO convention in Cleveland November 1, Federal Security Administrator Ewing insisted that the Truman Administration is as strong as ever for compulsory health insurance but carefully avoided any direct reference to the recent statement by Senator Hubert H. Humphrey (Democrat, Minnesota) expressing his dissatisfaction with the insurance provisions in the Thomas-Murray-Dingell bill. Humphrey, who is one of the bill's Senate sponsors and heretofore an ardent supporter of federalized medical care, made it clear that he believes that more consideration should be given to the proposed system's complexities before Congress adopts such a plan. His statement of this position elicited bitter denunciation of the Minnesotan by the labor press.

Coming Medical Meetings

American Medical Association Clinical Session, Washington, D. C., December 6-9. Dr. George F. Lull, 535 N. Dearborn, St., Chicago, Secretary.

American Academy of Pediatrics, San Francisco, Nov. 14-17. Dr. Clifford G. Grulee, 636 Church St., Evanston, Ill., Secretary.

American Society of Anesthesiologists, New York, Hotel New Yorker, Dec. 7-10. Dr. Curtiss B. Hickcox, 188 W. Randolph St., Chicago 1, Secretary.

Post Graduate Medical Assembly of South Texas, Houston, Nov. 29-Dec. 1. Dr. E. Trowbridge Wolf, 229 Medical Arts Bldg., Houston, Secretary.

Puerto Rico, Medical Association of, San Juan, Dec. 14-18. Dr. Juan Basora-Deñllo, 1459 America St., Santurce, Secretary.

Radiological Society of North America, Cleveland, Dec. 4-9. Dr. Donald S. Childs, 713 E. Genesee St., Syracuse 2, N. Y., Secretary.

Southern Medical Association, Cincinnati, Nov. 14-17. Mr. C. P. Loranz, Empire Building, Birmingham, Ala., Secretary.

Southern Psychiatric Association, New Orleans, Nov. 27-29. Dr. Newdigate M. Owensby, 384 Peachtree St., N.E., Atlanta, Georgia, Secretary.

Southern Society of Electroencephalography, New Orleans, Nov. 30. Dr. Samuel C. Little, 2111 Highland Ave., Birmingham 5, Ala., Secretary.

Southern Surgical Association, Hot Springs, Va., The Homestead, Dec. 6-8. Dr. John C. Burch, 2112 West End Ave., Nashville 5, Tenn., Secretary.

Western Surgical Association, Santa Barbara, Calif., Nov.29-Dec. 2. Dr. Warren H. Cole, 1853 W. Polk St., Chicago 12, Secretary.

GOVERNMENT SERVICES

ARMY

MEETING OF EDUCATION COMMITTEE

The Professional Education Committee and representatives of the Education Committees of Army teaching hospitals met in the Surgeon General's office October 25-28 under the chairmanship of Col. Floyd L. Wergeland. The purposes of the meeting were to select qualified officers for resident and senior resident level who will enter the Military Resident Program January 1, to present space allotments in each specialty and each hospital and to select qualified officers for all levels of training who will enter the program July 1, 1950.

Representatives of the Army's teaching hospitals were: Brig. Gen. Edwin H. Roberts (MC), commanding general, Fitzsimond General Hospital, Denver; Brig. Gen. Leonard D. Heaton (MC), director of Professional Services, Letterman General Hospital, San Francisco; Col. Rawley E. Chambers (MC), chief, Neuropsychiatry Branch, Brooke Army Medical Center, Fort Sam Houston, Texas; Col. Charles L. Leedham (MC), chief, Medical Services, Oliver General Hospital, Augusta, Ga.; Col. Walter Moursund (MC), director of Professional Training, Army Medical Center, Washington, D. C.; Major Frank K. Lawford (MSC), secretary, Education Committee, Gorgas Hospital, Panama Canal Zone, and Major John K. Wallace (MC), secretary, Education Committee, Valley Forge General Hospital, Phoenixville, Pa.

MEETING OF BALTIMORE RESERVE OFFICERS

Medical Department reserve officers from the Baltimore area held a meeting at Johns Hopkins University, October 26, arranged by Dr. Perrin H. Long, professor of internal medicine at Johns Hopkins and a member of the executive council of the Society of Medical Consultants of World War II. The speakers were: Col. Robert L. Black, assistant chief, Personnel Division, who discussed general plans and policies of the Medical Department Reserve Program; Lieut. Col. C. H. Walsh, of the Medical Plans and Operations Division, who described the revised organization procedures, which state that professional personnel assigned to a unit will not join the unit until their professional skills are actually required; Major A. J. Colyer of the Personnel Division, who discussed the career guidance policy for Medical Department officers, and Major John A. Mikuluk of the Personnel Division, who discussed mobilization assignments and retirement credit points for reserve officers.

PUBLIC HEALTH SERVICE

MORE FEDERAL FUNDS FOR HOSPITALS AND RESEARCH

Amendments to the Hospital Survey and Construction Act, which became effective when signed by the President on October 25, increased the authorized amount of federal grants to the states from $75,000,000 to $150,000,000 each year. The period during which allotments can be made is extended from June 30, 1950 to June 30, 1955. A new formula provided by the amendments permits a federal contribution as high as 66.6 per cent of the total construction costs for new hospitals as compared with the 33.3 per cent ceiling under the original law.

The amendments also authorize federal grants totaling $1,200,000 a year for a five year period for research programs to improve and coordinate hospital services. Surgeon General Scheele pointed out that one aspect of planning under the research program will be to find ways of providing better linkage between large urban hospital centers and hospitals in smaller areas. "It is our hope, he said, to work out a means by which specialized types of service now found only in larger hospitals will be available to smaller units. Smaller hospitals too frequently are forced to operate as isolated units . . . they cannot afford large outlays for the high-priced equipment which is maintained in larger medical centers."

Pioneer projects in interhospital relationships are already being conducted at the Medical College of Virginia, the New England Medical Center, the Council of Rochester Regional Hospitals and the Medical School of the University of Michigan. It is anticipated that these projects will continue to serve as useful sources for data on professional and administrative problems in connection with the various phases of hospital service.

Dr. Scheele also pointed out that the Public Health Service, under the amendments, is authorized to make grants for additional studies to the states, medical schools, regional hospital councils and similar nonprofit institutions. The studies may include projects for establishing rotating internships, refresher courses for physicians, clinical conferences and provisions for the common use of diagnostic facilities and equipment, all of which will be of aid to smaller hospitals.

Under the national hospital construction program, 954 hospital projects had been approved by Oct. 1, 1949. About 400 were under construction, and 50 had been completed and are now open. The majority of these projects are small general hospitals of 50 beds or less and are in small towns or rural areas.

REGULAR CORPS EXAMINATION FOR MEDICAL OFFICERS

A competitive examination for appointment of medical officers in the Regular Corps of the U. S. Public Health Service will be held, Jan. 9-11, 1950 at a number of points throughout the United States. Application must be received no later than Dec. 12, 1949. The Regular Corps is a commissioned officer corps composed of members of various medical and scientific professions, appointed in appropriate professional categories such as medicine, dentistry, nursing, engineering and pharmacy. All commissioned officers are appointed to the general service and are subject to change of station. Appointments will be made in the grades of assistant surgeon (first lieutenant) and senior assistant surgeon (captain). Appointments are permanent and provide opportunities to qualified physicians for a lifetime career in clinical medicine, research and public health. Additional information may be obtained by writing to the Surgeon General, Public Health Service, Washington 25, D. C. Attention: Division of Commissioned Officers.

PHYSIOLOGISTS WANTED

A competitive examination will be held Feb. 6-8, 1950 for the appointment of physiologists in the Regular Commissioned Corps of the Public Health Service. Examinations will be held at a number of points throughout the United States. Appointments from the examination will be in the grades of assistant and senior assistant scientist, equivalent to the Army ranks of first lieutenant and captain, respectively. Additional information and application forms may be obtained by writing to the Public Health Service, Washington 25, D. C., Attention: Division of Commissioned Officers. Applications must be on file in Washington by Jan. 2, 1950.

PERSONAL

Dr. Tulio Velasquez of the San Marcos University Medical School, Lima, Peru, is at the National Institutes of Health, Bethesda, Md., under a fellowship awarded by the Rockefeller Foundation to survey the technics used in studies on environmental adaptation. Dr. Velasquez is making a survey for the Institution of Andean Biology, with respect to myoglobin and the adaptation of animals to high altitude.

Medical News

(Physicians will confer a favor by sending for this department items of news of general interest: such as relate to society activities new hospitals, education and public health. Programs should be received at least two weeks before the date of meeting.)

CONNECTICUT

Appoint Director of Medical Service.—Dr. William H. Horton, medical director for the Connecticut State Public Welfare Department, has been appointed full time medical director for Connecticut Medical Service, succeeding Dr. Creighton Barker, New Haven, the society's executive secretary, who has been acting medical director since it started operation last February. Rapid growth of the service has increased the administrative duties so that a full time medical director is required. As of September 1 the plan in seven months of operation has insured 154,000 persons, representing 72,000 subscriber contracts and about 1,400 business and industrial concerns. Dr. Horton is a native of Fall River and is a graduate of Boston University School of Medicine.

ILLINOIS

Ten Year Decline in Typhoid.—While modern sanitary practice has all but eliminated typhoid from the major communicable disease problems, the residuum is still too high to permit a complacent attitude. This residuum, the State Department of Health says, is almost entirely due to typhoid carriers, former victims of typhoid. The harm which an unknown carrier can produce warrants the application of every effort in his recognition. "The seemingly unpleasant task of collecting stool specimens from every conceivable contact, and the repetition of such collections until a source is found, is a small price to pay in ridding communities of the hazard of the unknown typhoid carrier." The State Department of Health reports that in 1939 there were 870 cases of typhoid in Illinois and that in 1949 up to October 1 there had been only 74 cases.

District Conference in Pekin.—A postgraduate conference has been arranged for the Fifth Councilor District at the Country Club, Pekin, November 17 with Harold M. Camp, Monmouth, secretary of the Illinois State Medical Society, and Ralph P. Peairs, Normal, councilor for the district, presiding and with the Tazewell County Medical Society acting as host. The following Chicago physicians will participate:

Samuel M. Bluefarb, New Methods in Dermatologic Treatment (kodachrome® slides).
Lyle A. Baker, Clinical Aspects of Pericarditis.
John W. Huffman, Cancer of the Cervix.
Frederick H. Falls, Cesarean Section.

A roundtable discussion will conclude the afternoon session. After a social hour and dinner, Dr. John T. Reynolds, Chicago, will discuss "Diagnostic Problems and Operative Precautions in the Treatment of the Acute Surgical Abdomen." This conference is one of twelve authorized for the 1949-1950 season by the Council of the Illinois State Medical Society and was arranged by its postgraduate Education Committee, of which Robert S. Berghoff and George A. Hellmuth, both of Chicago, are chairman and vice chairman, respectively.

Chicago

Assembly Hour Lectures.—Assembly Hour lectures were presented November 2 by Dr. Robert K. S. Lim, former surgeon general, Chinese Nationalist Army, visiting professor, University of Illinois, College of Medicine, Chicago, and by John J. DeBoer, Ph.D., professor of education, University of Illinois, Urbana, on November 9, at the University of Illinois, Chicago Professional Colleges.

Jaffé Memorial Lecture.—The fourth Richard H. Jaffé Memorial Lecture of the Institute of Medicine of Chicago will be delivered by Dr. Granville A. Bennett, professor and chairman of the department of pathology, University of Illinois College of Medicine, at the Palmer House, November 25 at 8 p. m., on "Reactive and Neoplastic Changes in Synovial Tissues."

Lectures on Legal Medicine.—Four lectures on Legal Medicine will be presented on December 5, 7 and 8 at the Chicago Medical School at 12:30 p. m. and December 10 at Mount Sinai Hospital at 11 a. m. Dr. Leone Lattes, chairman, department of medical jurisprudence at the University of Pavia, Italy, will lecture on "Identification of Blood Stains and Secretions," "Paternity Tests," "Legal Aspects of Industrial Medicine" and "Legal Medicine of Blood Transfusion."

Exhibit on Congenital Heart Disease.—The Hektoen Institute for Medical Research of the Cook County Hospital announces that a scientific exhibit, "Congenital Heart in Clinical Medicine," by Drs. Benjamin M. Gasul, Egbert H. Fell, Hans L. Popper, William P. Mavrelis, James A. Campbell, Maurice Lev, Carl Davis Jr., Hans Hartenstein and Raul Casas, received first prize at the fourteenth annual meeting of the Mississippi Valley Medical Society recently in St. Louis. The work of Dr. Gasul and his co-workers is being supported by the Galter Foundation and the Melvin L. Emerich Fund. On September 13 the Galter Foundation gave a grant of $10,000 to the Hektoen Institute, as a yearly subscription, toward the work of Dr. Gasul and his associates, for the study of heart diseases in children.

Research on Eclampsia.—A climate room, where the temperature can be varied from 50 to 110 F., has been built for eclampsia research at Chicago Lying-In Hospital and Dispensary of the University of Chicago. More than half the maternal deaths occurring in southern states are caused by toxemia of pregnancy, and eclampsia has occurred repeatedly when an abrupt change in the weather took place. The study is being conducted by Dr. William J. Dieckmann, chief of staff and Mary Campau Ryerson professor of obstetrics and gynecology. The research, accelerated by a $381,000 fiftieth anniversary gift to Lying-In by Chicagoans in 1945, has included dietary care centered on proteins, retention of salt and water and geographic and climate surveys. The climate room will also be available to the University of Chicago Clinics for studies of the proper temperatures and humidities for patients postoperatively and for the study of diseases which are intensified by certain climatic changes.

MICHIGAN

Dr. Smyth Goes to Denver.—Dr. Charles J. Smyth, Eloise, who has been assistant medical director of Wayne County General Hospital since 1941, left September 1 to become assistant director of postgraduate medicine and assistant professor of medicine at the University of Colorado, Denver. Dr. Smyth is a graduate of Jefferson Medical College of Philadelphia, 1935.

Survey of Children with Defective Hearing.—The Michigan Department of Health and local health departments are now carrying on a program to find children who have some degree of hearing loss which needs attention. In the six years since the program was started the hearing of more than 325,000 children in 62 Michigan counties has been tested, and, of that number, 3 per cent showed some hearing loss. Of those who received medical treatment, 75 per cent improved, about half of them to normal hearing.

NEW YORK

Joachim Lectures.—The seventh of the series of Dr. Henry Joachim Lectures on the Application of Fundamental Sciences in Medicine will be delivered by Dr. Harry S. Eagle, chief, experimental therapeutics, National Institutes of Health, Bethesda, Md., on "The Factors of Time and Dosage in the Therapeutic Use of Penicillin." The lecture will be presented November 28 at 8:45 p. m. in the Auditorium of the Jewish Sanitarium and Hospital for Chronic Diseases, Brooklyn.

Postgraduate Instruction.—The Medical Society of the State of New York with the cooperation of the New York State Department of Health has arranged postgraduate instruction for the Schoharie County Medical Society on November 15 and 22 at 4 p. m. at the Cobleskill High School. Dr. Edward F. Hartung, chief, Division of Arthritis, New York Post-Graduate Medical School and Hospital will speak November 15 on "Diagnosis and Treatment of Back Pain from the General Practitioner's Point of View." On November 22 Dr. David Lehr, assistant professor of pharmacology, New York Medical College, Flower and Fifth Avenue Hospitals, New York, will speak on "Chemotherapy of Bacterial Infections."

New York City

Harvey Lecture.—Irwin C. Gunsalus, Ph.D., professor of bacteriology, Indiana University, Bloomington, will deliver the second Harvey Lecture of the current series at the New York Academy of Medicine on November 17. Dr. Gunsalus will speak on "Comparative Metabolism: Bacterial Nutrition and Metabolic Function."

Appoint Professor of Anaesthesia.—Dr. Emanuel M. Papper, Flushing, has been named professor of anesthesia at Columbia University College of Physicians and Surgeons and attending anesthetist and executive officer of the anesthesia service, Presbyterian Hospital. Dr. Papper comes to the Columbia-Presbyterian Medical Center from New York University-

Bellevue Medical Center, where he has been associate professor of anesthesiology, New York University, and assistant to Dr. Emery A. Rovenstine, director of the Division of Anesthesia, Bellevue Hospital. Dr. Papper received his M.D. degree from New York University College of Medicine in 1938. He has held fellowships, internships and residencies at New York University and Bellevue Hospital. During the war he served four years in the U. S. Army and was chief of the Sections of Anesthesiology at Torney, Leibble and Walter Reed General hospitals.

Friday Afternoon Lectures.—The twenty-third series of Friday afternoon lectures sponsored by the New York Academy of Medicine, 2 East 103 Street, began November 4. The following lectures will be given during the remainder of the present year:

November 18, Effects of Rice Diets on Metabolism, Dr. Alexander Gutman, professor of medicine, Columbia University, College of Physicians and Surgeons.
December 2, Causes of Arteriosclerosis, William Dock, professor of medicine, Long Island College of Medicine.
December 9, Boeck's Sarcoid, Dr. I. Snapper, director of medical education, Mount Sinai Hospital.
December 16, Hormone Relationship to Rheumatic Disease, Dr. Richard H. Freyberg, associate professor of clinical medicine, Cornell University Medical College.

NORTH CAROLINA

Symposium on Gastroenterology.—The first annual symposium presented by the Raleigh Academy of Medicine will be held November 18 at the Hotel Sir Walter, Raleigh. The speakers will be:

Thomas T. Mackie, Winston-Salem, Acute and Chronic Infections of the Colon.
Henry W. Cave, New York, Surgery of Colon and Rectum.
Robert P. Barden, Philadelphia, Cancer of Gastrointestinal Tract as Seen by the Radiologist.
Louis A. M. Krause, Baltimore, Disease of the Liver, Gallbladder and Pancreas.
Richard B. Cattell, Boston, Surgery of Esophagus, Stomach and Duodenum.

A roundtable discussion will be held on "Newer Concepts of Peptic Ulcer Therapy."

OHIO

Present First Fifty Year Pin.—The first fifty year pin of the Ohio State Medical Association was presented to Dr. Edwin A. Murbach of Archbold at a homecoming celebration of the community in his honor. The pin was presented by Dr. Arthur A. Brindley of Toledo, immediate past president of the association. More than 1,200 former patients attended the celebration, and Dr. Murbach received an engraved gold wrist watch. He was acclaimed for his work as a member of the Archbold Board of Education for nearly fifty years; as a church leader and proponent of Fulton County's first hospital at Wauseon. The gold pins were authorized by the House of Delegates at the 1948 annual meeting and will be presented to members of the association who have been Doctors of Medicine for a half-century. The head quarters office has been compiling a list of physicians eligible to receive the pins.

PENNSYLVANIA

Army Doctor Talks on Atomic Medicine.—By request of the Medical Society of the State of Pennsylvania, Major Gerald M. McDonnel (MC) is presenting a series of talks on "Care and Treatment of Patients in the Event of Atomic Disaster" to county medical groups in Pennsylvania. Major McDonnel is chief of the Special Projects Division, Office of the Surgeon General. The talks have been given in Clearfield, Erie, Harrisburg, Johnstown and Lancaster since October 6. More engagements along similar lines have been made, to take place in the spring, at Oil City, April 5; Reading, April 12; Scranton, April 19; Washington, April 26; Allentown, May 2, and Williamsport, May 3.

Philadelphia

Meeting of Ex-Residents.—The sixty-third annual banquet of the Association of Ex-Resident and Resident Physicians of the Philadelphia General Hospital will be held December 6 at 7 p. m. Reservations may be had by writing to the secretary-treasurer: Dr. R. C. McElroy, Room 514, 133 South 36th Street, Philadelphia 4.

Graduate School Appointments.—The following appointments have been made by the Graduate School of Medicine of the University of Pennsylvania: Dr. Henry L. Bockus, chairman, department of internal medicine; Dr. Herman Beerman, chairman, department of dermatology and syphilology, and James R. Cameron, D.D.S., acting director of the course in oral surgery and anesthesia.

SOUTH DAKOTA

University Appointment and Promotions.—Dr. James Steele, Brooklyn, has been appointed assistant professor of radiologic anatomy and clinical assistant professor of radiology at the University of South Dakota School of Medical Sciences, Vermillion. Dr. Steele is a graduate of Eclectic Medical College of New York, 1910. Dr. Francis J. Abts has been promoted to clinical associate professor of gynecology and Dr. Chester B. McVay to associate professor of surgical anatomy.

TEXAS

Meeting of Urologists.—The Texas Urological Society will meet at the Shamrock Hotel, Houston, on November 28. The meeting, which will consist of clinics, open discussions, luncheons and a banquet, will be open to all physicians interested in urology.

Residency in Psychiatry.—The Veterans Administration Hospital, Houston, in affiliation with the department of neuropsychiatry, Baylor University College of Medicine, Houston, is offering a three year residency in psychiatry. Information may be received from the Department of Neuropsychiatry, Baylor University College of Medicine, Houston.

UTAH

State Medical Election.—The Utah State Medical Association at its recent meeting elected the following officers for the year 1949-1950: Dr. Vivian P. White, Salt Lake City, president-elect; Conrad H. Jenson, Ogden, president; Thomas C. Weggeland, Salt Lake City, secretary, and Leslie J. Paul, Salt Lake City, treasurer.

WISCONSIN

The Annual Dearholt Days.—The tenth annual "Dearholt Days in Wisconsin" will be observed in Milwaukee and Madison November 14 and 15 with Drs. Michael L. Furcolow, U. S. Public Health Service, and Edward J. O'Brien, chief, thoracic surgery service at Herman Kiefer and Harper hospitals, Detroit, as speakers. The Milwaukee lectures will be given before the faculty and students of Marquette University School of Medicine, Milwaukee. A similar program will be presented the following afternoon at the University of Wisconsin's Service Memorial Institute and the evening program before the Dane County Medical Society at the Madison Club. Dr. Furcolow will address medical students on "Systemic Fungus Infections" and the medical societies on "Recent Research in Histoplasmosis." Dr. O'Brien's subjects will be "Present Day Treatment of Pulmonary Tuberculosis" and "Differential Diagnosis of Surgical Diseases of the Lung." Dearholt Days, dedicated to the medical students and general medical profession, are sponsored by the Wisconsin Anti-Tuberculosis Association, the Wisconsin Trudeau Society, the Dane County Medical Society and the two medical schools.

GENERAL

Meeting of Industrial Hygiene Foundation.—The fourteenth annual meeting of the Industrial Hygiene Foundation of America, Inc., will be held at the Mellon Institute, Pittsburgh, on November 16-18. A seminar on diabetes in industry will take place November 16. Among the doctors speaking are:

Howard F. Root, Boston, Detection of Diabetes in Industrial Workers.
Joseph T. Beardwood, Philadelphia, Industry's Role in the Employment of the Diabetic Person.
Joseph H. Barach, Pittsburgh, Diabetes in History.
John A. Reed, Washington, D. C., Management of Accidental Injuries to Diabetic Persons.

Dr. Crowell Receives Cancer Society Medal.—Dr. Bowman C. Crowell, Northwestern University Medical School, Chicago, has been awarded the American Cancer Society's 1949 medal (October 28) at the annual dinner of the society in New York. He was praised for "signal accomplishments in developing and extending improved services to cancer patients through diagnostic and treatment clinics." Dr. Crowell has lectured at Northwestern University since 1927 and has just retired as associate director of the American College of Surgeons, with which he had been connected since 1926.

Cerebral Palsy Association Appoints Director.—The United Cerebral Palsy Association, Inc., has appointed J. Patrick Rooney, associate director of the American Social Hygiene Association, as executive director of the association, the uniting agency for hundreds of cerebral palsy groups throughout the country. The association has been incorporated since the first national conference on cerebral palsy last February. The aims of the group are: to establish facilities for the treatment and education of cerebral palsied persons, to finance research for development of preventive methods and improved treatment, to develop training of urgently needed personnel and to carry

on a program of public education. At the October 15 meeting of the Planning Conference, a National Cerebral Palsy Drive was planned for the Spring of 1950. The association was formerly called the National Foundation for Cerebral Palsy. Inc.

Courses in Radioisotopes.—The Oak Ridge Institute of Nuclear Studies announced that three additional basic courses in the technics of using radioisotopes as tracers will be held this winter. The dates of the courses are: January 2-27; January 30-February 25, and March 6-31, 1950. Thirty-two participants will be accepted for each course. Application for the January 2 course should be mailed prior to December 1. Each session is divided into laboratory work, lectures on laboratory experiments, general background lectures and special topic seminars. Seminar topics include the use of tracers in animal and human experimentation, design of radiochemical laboratories, dosimetry, instrumentation, the effects of radiation on living cells and the principles and practices of radiation protection. A registration fee of $25 is charged for each participant. Information may be obtained from Dr. Ralph T. Overman, chairman, Special Training Division, Oak Ridge Institute of Nuclear Studies, P. O. Box 117, Oak Ridge, Tenn.

1949 **Nobel Prize for Medicine.**—For discoveries in the function of the brain Dr. Walter R. Hess, director of Zurich (Switzerland) University's Physiological Institute and Dr. Antonio C. de A. F. Egas Moniz, professor emeritus of neurology at Lisbon (Portugal) University Faculty of Medicine, will share the 1949 Nobel prize for medicine. Half of the $30,000 was awarded Dr. Hess for his studies of the reaction of animals to electric shocks that helped dispel previous theories concerning the effect of instinct, power of observation and natural intelligence on their behavior. Dr. Hess is a specialist in the circulation of the blood and breathing and has developed new conceptions of how the nervous system works. Dr. Moniz, author of many medical books, will receive the other half of the prize for devising and perfecting prefrontal lobotomy. The winners were chosen by the Caroline Institute at the University of Medicine in Stockholm. They will be presented their awards at a ceremony in Stockholm December 10 along with winners of the Nobel prizes for literature, physics and chemistry.

National Committee for the Improvement of Nursing Services.—The Subcommittee on School Data Analysis of the National Committee for the Improvement of Nursing Services has just completed a survey of the educational facilities of basic programs in nursing. Questionnaires were sent to schools of nursing in the United States, Hawaii and Puerto Rico. Through the cooperation of hospital, medical, educational and allied groups with the nursing profession, 96 per cent of the nation's 1,195 schools of nursing responded. Supplementary information included data published by the United States Office of Education, the American Hospital Association and the American Medical Association. The Study provides also material on resources of nursing education facilities which will be invaluable in regional planning for nursing education to meet the needs of nursing services.

The two groups into which schools of nursing have been classified are: group I, which includes 25 per cent of the basic programs in nursing—those with the highest standings, and group II, which includes 50 per cent of the basic programs in nursing—those with the middle standings. Not included in the classification is another 25 per cent of basic programs in nursing—those with the lowest standings, a few programs for which data were not returned and schools which requested not to be included.

Schools of nursing which participated in the survey have received confidential summary profiles together with explanatory letters. The profile showed the school the relative national standing of its basic program in nursing and some of its component factors. It also indicated whether the basic program of the schools was included in the classification and, if so, in what group it had been classified.

Mississippi River Survey.—In cooperation with the Minnesota Water Pollution Control Commission and the Iowa State Department of Health, the Wisconsin State Committee on Water Pollution has undertaken joint studies of the Mississippi River from the junction of the St. Croix River and the Mississippi River at Prescott to a point just above Government Dam no. 11 at Dubuque, Iowa. The section of the Mississippi River under consideration has a total of 240 stream miles, and a number of municipalities are located directly on it. The following conclusions were reached:

1. From the chemical information available, it is concluded that the Mississippi River is not excessively polluted in the section from La Crosse to Dubuque with the exception of a localized area at Prairie du Chien.

2. Pollutional conditions exist on Half-Way Creek at Holman, Isabell River at Ellsworth and La Crosse River at West Salem.

3. Sewage and industrial pollution results in high bacterial population at all stations. No stream location is safe for bathing, water supply or certain industrial uses due to potential hazard of water-borne diseases.

4. While sewage pollution of the Mississippi River may result in bacterial hazards to health, it does not appear that the present degree of pollution is more than locally detrimental to biologic stream welfare.

To determine the sources of the pollution of the Mississippi River and the tributary streams, a domestic and industrial waste survey was undertaken November 8-10, 1948. The report is available on request from the Wisconsin State Committee on Water Pollution, Madison.

Prevalence of Poliomyelitis.—Reports of cases of poliomyelitis for the periods indicated have been received from the National Office of Vital Statistics, U. S. Public Health Service.

Division and State	Week Ended Oct. 29, 1949	Week Ended Oct. 30, 1948	Median, 1944-1948	Jan. 1 to Oct. 29, 1949	Jan. 1 to Oct. 30, 1948
New England States					
Maine	6	..	..	435	37
New Hampshire	3	..	..	181	18
Vermont	10	2	2	135	22
Massachusetts	45	6	21	1,705	181
Rhode Island	6	..	..	151	8
Connecticut	34	5	8	575	112
Middle Atlantic States					
New York	152	55	55	5,072	1,321
New Jersey	52	25	25	1,350	715
Pennsylvania	39	25	22	734	669
East North Central States					
Ohio	57	14	25	1,661	1,074
Indiana	29	18	14	1,048	366
Illinois	53	21	27	2,705	1,013
Michigan	50	52	21	2,568*	602
Wisconsin	38	32	26	985	539
West North Central States					
Minnesota	62	63	24	1,778	1,161
Iowa	12	44	25	1,033	1,019
Missouri	19	1	12	1,271*	284
North Dakota	2	..	..	439	113
South Dakota	12	58	..	352	526
Nebraska	19	13	4	588	663
Kansas	16	5	5	684	288
South Atlantic States					
Delaware	..	2	2	42	128
Maryland	24	6	6	237	102
District of Columbia	7	6	3	99	123
Virginia	9	9	9	308	518
West Virginia	6	4	4	328	153
North Carolina	1	29	14	214	2,402
South Carolina	1	11	4	98	355
Georgia	9	3	3	201	215
Florida	8	8	6	228	245
East South Central States					
Kentucky	29	3	4	602	185
Tennessee	22	6	4	501	350
Alabama	6	2	3	228	200
Mississippi	3	4	4	314	147
West South Central States					
Arkansas	13	1	..	936*	134
Louisiana	2	..	4	215	134
Oklahoma	23	3	1	1,216	339
Texas	35	31	14	2,123	1,611
Mountain States					
Montana	4	7	2	89	67
Idaho	17	1	2	447	101
Wyoming	1	1	1	104	72
Colorado	19	3	3	614	110
New Mexico	3	5	3	190	75
Arizona	3	3	..	145	138
Utah	12	16	5	249	105
Nevada	..	..	..	15	7
Pacific States					
Washington	17	22	9	541	302
Oregon	13	7	4	264	150
California	68	198	36	2,155	4,150
Total	1,071	880	...	38,153*	23,418
Median, 1944-1948	....	...	581	17,437	

* Deductions: Michigan, 2 cases week ended September 23 and 1 case week ended October 7; Missouri, 1 case week ended October 15; Arkansas, 1 case week ended July 23.

Marriages

WILLIAM JAMES BUROKUS, Maywood, N. J., to Carolyn Margaret Rovas, D.D.S., in Rochester, N. Y., July 16.

WILLIAM ALFRED SAWYER, Rochester, N. Y., to Miss Helen Cederquist of Jamestown in Winnetka, Ill., August 16.

LAWRENCE LEE Jr., Savannah, Ga., to Miss Elizabeth Middleton Andrews of Flat Rock, N. C., August 27.

SETH SYDNEY PHILBROOK, Piqua, Ohio, to Miss Rose Hart of Canal Winchester, August 19.

Deaths

Frederick Clyde Potter ✦ Cuyahoga Falls, Ohio; born in Jenningsville, Pa., July 10, 1882; Medico-Chirurgical College of Philadelphia, 1909; specialist certified by the American Board of Pathology; fellow of the American College of Physicians, American Psychiatric Association, American Association for the Advancement of Science and the American Society of Clinical Pathologists; past president of the Summit County Medical Society and the Ohio Society of Clinical and Laboratory Diagnosis; formerly on the faculty of the Indiana University School of Medicine in Indianapolis, where he was affiliated with the Central State Hospital; at various times on the staffs of the Kalamazoo (Mich.) State Hospital and the Mercer (Pa.) Sanitarium; formerly consultant in pathology at the Citizens' Hospital, Barberton, director of the clinical laboratory and pathologist at the Peoples Hospital, pathologist at the Children's and St. Thomas hospitals all in Akron; served during World Wars I and II; died September 24, aged 67.

Phillips Norton Davis, Tangerine, Fla.; University of Vermont College of Medicine, Burlington, 1918; member of the American Urological Association, American Medical Association and the Missouri State Medical Association; fellow of the American College of Surgeons; for many years practiced in St. Louis, where he served as health commissioner and police surgeon and on the board of education; served during World Wars I and II; for six years chief of athletic examining board of Missouri; formerly affiliated with St. Louis City Sanitarium, St. Louis City Hospital, Evangelical Deaconess Hospital and St. John's Hospital, all in St. Louis; for many years consultant at the Veterans Administration Hospital in Jefferson Barracks; died August 29, aged 55, of coronary thrombosis.

William Duncan Reid, North Parsonfield, Me.; born in Newton, Mass., in 1885; Harvard Medical School, Boston, 1909; specialist certified by the American Board of Internal Medicine; fellow of the American College of Physicians; served in France with the American Expeditionary Forces during World War I; served during World War II; formerly assistant professor of medicine at the Boston University School of Medicine; for many years on the staffs of the Boston Dispensary and Boston City Hospital; formerly on the staffs of the Waltham (Mass.) Hospital and the Massachusetts Memorial Hospitals in Boston; died September 29, aged 63, of myelogenous leukemia.

Vanderpoel Adriance, Williamstown, Mass.; College of Physicians and Surgeons, medical department of Columbia College, New York, 1893; member of the American Medical Association; served during World War I; died August 22, aged 80, of cerebral hemorrhage.

Edward August Albers, Santa Monica, Calif.; Kansas City (Mo.) Medical College, 1903; died August 26, aged 72, of hypertensive cardiovascular disease and cerebral arteriosclerosis.

Anson Gaston Allen ✦ Astoria, Ore.; University of Oregon Medical School, Portland, 1919; past president of the Clatsop County Medical Society; fellow of the American College of Surgeons; formerly associated with the U. S. Public Health Service; served during World War I; on the staffs of St. Mary's Hospital and the Columbia Hospital; died August 17, aged 57, of coronary occlusion.

Caroline Louise Avery, San Jose, Calif.; Cooper Medical College, San Francisco, 1897; died August 24, aged 84, of bronchopneumonia.

Mortimer Harry Bannister, Pearsall, Texas; University of Texas Faculty of Medicine, Galveston, 1940; member of the American Medical Association; served overseas during World War II; medical superintendent of Goodnight Clinic Hospital; killed in an airplane crash near San Antonio August 30, aged 34.

Paul Edward Belknap ✦ Topeka, Kan.; University of Kansas School of Medicine, Kansas City, Kan., 1918; member of the American Academy of Pediatrics; served as a member of the city board of health; affiliated with St. Francis Hospital and Jane C. Stormont Hospital; died August 29, aged 57, of coronary thrombosis.

Henry Max Bernhardt, Arlington, Mass.; Boston University School of Medicine, 1935; member of the American Medical Association and the New England Pediatric Society; served during World War II; formerly assistant physician at the Philips Academy in Andover; physician for the Massachusetts Institute of Technology in Cambridge; died August 31, aged 40.

Basil Brown Gordon Blackstone ✦ Wilmington, Del.; University of Pennsylvania School of Medicine, Philadelphia, 1918; affiliated with the Delaware Hospital; died August 31, aged 57, of acute coronary occlusion.

William Frederick Boos ✦ Fall River, Mass.; Harvard Medical School, Boston, 1901; author of "The Poison Trail"; died in Truesdale Convalescent Home August 11, aged 79, of chronic myocarditis.

William Warren Boyd ✦ Spartanburg, S. C.; Medical College of the State of South Carolina, Charleston, 1909; past president of the Spartanburg County Medical Society; on the staff of the Spartanburg General Hospital, where he died August 12, aged 67, of cerebral hemorrhage.

Henry Percival Boyer ✦ Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1891; served on the staff of Stetson Hospital; died August 25, aged 80.

James Lennon Brennan, Washington, Pa.; University of the South Medical Department, Sewanee, Tenn., 1904; served during World War I; died August 30, aged 69.

Jacob Hemans Burley ✦ Port Huron, Mich.; Saginaw Valley Medical College, Saginaw, 1899; past president and secretary of St. Clair County Medical Society; chairman of St. Clair County Health Unit; on the staff of Port Huron Hospital, where he died August 14, aged 71, of carcinoma of the prostate with metastasis.

John Wesley Burney, Atlanta; Meharry Medical College, Nashville, Tenn., 1913; died August 7, aged 60, of hypertensive heart disease.

James Clarence Connor ✦ Cave Spring, Ga.; Birmingham Medical College, 1913; died August 4, aged 58, of cerebral hemorrhage.

Oscar Marvin Crenshaw, Lebanon, Ky.; Louisville (Ky.) Medical College, 1904; died August 14, aged 72, of carcinoma.

Arthur Herman Dellinger, Rome, Ga.; Emory University School of Medicine, Atlanta, 1916; member of the American Medical Association; past president of the Floyd County Medical Society; chairman of the Floyd County Board of Health; served during World War I; on the staffs of the Harbin and McCall hospitals; on the executive board and past president of the Floyd County Hospital; died August 26, aged 60, of coronary occlusion.

James W. Dorworth, Conneaut Lake, Pa.; Cleveland-Pulte Medical College, 1911; died August 30, aged 73, of coronary occlusion.

Robert H. Hodge, Athens, Texas; University of Texas School of Medicine, Galveston, 1905; member of the American Medical Association; past president of the Henderson County Medical Society; affiliated with the Henderson Memorial Hospital in Henderson; died recently, aged 69, of angina pectoris.

Harry Griffith Jones ✦ Baltimore; Southern Homeopathic Medical College, Baltimore, 1905; on the staff of the Maryland General Hospital; died August 24, aged 68, of coronary occlusion.

Edward Leo Kaufman, Powellton, W. Va.; University of Maryland School of Medicine, Baltimore, 1920; died August 31, aged 56, of injuries received in an automobile accident.

Fayette Dwight Kendrick, St. Paul; University of Michigan Homeopathic Medical School, Ann Arbor, 1881; died in the Miller Hospital August 24, aged 92, of aortic stenosis.

Ernst Loeffler ✦ Chicago; Medizinische Fakultat der Universitat, Wien, Germany, 1917; specialist certified by the American Board of Pathology; associate professor of pathology at the Loyola University School of Dentistry; research associate, Hektoen Institute for Medical Research of Cook County Hospital; formerly on the staff of Mount Sinai Hospital; died September 24, aged 57, of acute coronary thrombosis and pulmonary tuberculosis.

Kenneth C. Lum ✦ Portland, Ore.; University of Oregon Medical School, Portland, 1924; affiliated with the Good Samaritan Hospital; died September 18, aged 50, of hypertensive cardiovascular disease.

Charles Amne Lusk, Butler, Mo.; University Medical College of Kansas City, 1910; member of the American Medical Association; served on the staffs of the Research and Trinity Lutheran hospitals in Kansas City and the Butler

✦ Indicates "Fellow" of the American Medical Association.

Memorial Hospital; died in Kansas City August 27, aged 76, of chronic myocarditis.

Claudio Emmett McNenney ✠ Jersey City, N. J.; Columbia University College of Physicians and Surgeons, New York, 1904; chief of the bureau of communicable diseases of Jersey City; epidemiologist for the Jersey City Medical Center, where he died September 12, aged 68, of bronchopneumonia and arteriosclerotic heart disease.

Augustus Hamlin Mandell, New Bedford, Mass.; New York University Medical College, New York, 1897; Cornell University Medical College, New York, 1899; member of the American Medical Association; for many years city bacteriologist; affiliated with St. Luke's Hospital and Sassaquin Sanatorium; died September 3, aged 81.

Norman Edward Marion ✠ Big Rock, Ill.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1908; died in Sturgeon Bay, Wis., October 4, aged 64, of coronary thrombosis.

Donald Burr Marsh, Deming, N. M.; University of Michigan Homeopathic Medical School, Ann Arbor, 1915; secretary of the Luna County Medical Society; member of the American Medical Association; an officer in the medical corps of the U. S. Army during World War I; died in the Physicians and Surgeons Hospital September 1, aged 57, of primary carcinoma of the lung.

John Perry Mathias, Mediapolis, Iowa; Keokuk Medical College, College of Physicians and Surgeons, 1902; member of the American Medical Association; died in a hospital at Kearney, Neb., August 3, aged 80, of injuries received in an automobile accident.

Frank Raymond Mehler ✠ New London, Iowa; State University of Iowa College of Medicine, Iowa City, 1930; served on the staffs of the Mercy and Burlington Protestant hospitals in Burlington; died in Burlington August 23, aged 44, of cerebral hemorrhage.

Percy Shepherd Merrill ✠ Waterville, Maine; University and Bellevue Hospital Medical College, New York, 1899; a director of the Federal Trust Company; died September 10, aged 75.

Harry R. Miller, Chicago; John A. Creighton Medical College, Omaha, 1895; died September 30, aged 94, of chronic myocarditis and prostatic hypertrophy.

Myron Eli Millhon ✠ Columbus, Ohio; Jefferson Medical College of Philadelphia, 1923; on the staff of the White Cross Hospital; died September 28, aged 55, of coronary heart disease.

Mildred Lee Murray ✠ El Paso, Texas; Tulane University of Louisiana School of Medicine, New Orleans, 1928; died September 11, aged 45, of contusion of brain and fracture of the fourth cervical vertebra.

Truman Alfred Parker ✠ La Jolla, Calif.; University College of Medicine, Richmond, 1899; an Associate Fellow of the American Medical Association; died in San Diego September 4, aged 74, of myocarditis and arteriosclerosis.

William Wellesley Percy ✠ Rochester, N. Y.; Syracuse University College of Medicine, 1901; life member and for many years executive director of the Rochester Academy of Medicine; fellow of the American College of Surgeons; veteran of the Spanish-American War and World War I; affiliated with St. Mary's Hospital; died in Churchville August 9, aged 75, of cerebral thrombosis.

William La Cland Peters, Hendersonville, N. C.; Missouri Medical College, St. Louis, 1898; died September 1, aged 83.

John Thomas Pettit, Canton, Ga.; Atlanta School of Medicine, 1910; member of the American Medical Association; served as mayor of Canton; died August 10, aged 69.

Henry Garnett Plaster, Washington, D. C.; University College of Medicine, Richmond, 1899; member of the American Medical Association; died August 2, aged 70, of coronary occlusion.

James Henry Preas, Johnson City, Tenn.; Jefferson Medical College of Philadelphia, 1886; died September 7, aged 87, of coronary sclerosis.

Robert David Prendergast, Lakewood, Ohio; St. Louis University School of Medicine, 1947; served an internship and residency at St. John's Hospital in Cleveland; first lieutenant in the medical corps of the U. S. Army; died in the hospital at Forbes Air Base in Topeka, Kan., August 21, aged 25, of poliomyelitis.

John Elry Prest, Trenton, Neb.; University of Nebraska College of Medicine, Omaha, 1904; member of the American Medical Association; affiliated with St. Catherine of Sienna Hospital, McCook, where he died July 5, aged 71, of cerebral embolus.

Harold Franklin Preston ✠ Melrose, Fla.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1915; member of the county board of education; died in the Riverside Hospital, Jacksonville, August 17, aged 61, of pyemia.

William Sherman Randall, Shelton, Conn.; College of Physicians and Surgeons, medical department of Columbia College, New York, 1886; for many years health officer of Shelton; served as a member of the state legislature; affiliated with the New Haven (Conn.) General Hospital and the Griffin Hospital in Derby; died August 13, aged 88, of coronary thrombosis.

Budd Jameson Reaser, Martins Creek, Pa.; University of Maryland School of Medicine, Baltimore, 1909; member of the American Medical Association; served as president of the Northampton County Board of Prison Inspectors; died August 8, aged 66, of cardiac failure.

William Frederick Reasner ✠ Santa Monica, Calif.; Jenner Medical College, Chicago, 1913; for many years district health officer of Los Angeles County; at one time health director of Norfolk County, Va., and assistant to the director of health in Minneapolis; on the staff of the Santa Monica Hospital; died October 2, aged 72, of coronary sclerosis.

Harold Renaud Reed, Cheverly, Md.; Jefferson Medical College of Philadelphia, 1915; specialist certified by the American Board of Radiology; served during World War I; formerly chief radiologist at the Gallinger Municipal Hospital in Washington, D. C.; chief radiologist at the Prince George's General Hospital; died October 1, aged 58, of coronary occlusion.

Edward Nelaton Reeve, Baldwin, N. Y.; Long Island College Hospital, Brooklyn, 1915; died August 6, aged 58.

John Reith, College Place, Wash.; University of Oregon Medical School, Portland, 1911; member of the American Medical Association; died August 20, aged 66.

Harry Rich, St. Louis; Washington University School of Medicine, St. Louis, 1908; died in the Jewish Hospital August 19, aged 64, of heart disease.

James Robert Richardson, Union, W. Va.; University of Louisville (Ky.) Medical Department, 1910; county health officer; died in the Greenbrier Valley Hospital, Ronceverte, August 19, aged 68, of coronary thrombosis.

Justus Elijah Richardson, Axton, Va.; Hospital College of Medicine, Louisville, Ky., 1905; died in the Martinsville (Va.) General Hospital August 9, aged 69, of diabetes mellitus and hypertension.

Ferdinand August Ries ✠ Baltimore; University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, 1921; medical examiner for the department of public welfare; died recently, aged 50.

Frank Palmer Riggle, Cedar Rapids, Iowa; Keokuk Medical College, College of Physicians and Surgeons, 1900; member of the American Medical Association; served during World War I; died in St. Luke's Hospital August 24, aged 76, of heart disease.

William F. Rogers, St. Joe, Ark.; University of Arkansas School of Medicine, Little Rock, 1888; member of the American Medical Association; died August 5, aged 81, of heart disease.

Charles Frederick Rosenberger ✠ University City, Mo.; St. Louis University School of Medicine, 1927; member of the city board of health; assistant in surgery at his alma mater; affiliated with St. Mary's Group of Hospitals, St. Louis City Hospital and the Jewish Hospital in St. Louis, where he died August 23, aged 54, of cerebral hemorrhage.

Henry Roth ✠ New York; University of the City of New York Medical Department, 1893; formerly on the faculty of the Fordham University School of Medicine; fellow of the American College of Surgeons; honorary director of surgery at the Lebanon Hospital; consulting surgeon to the Union Hospital and the Bronx Eye and Ear Infirmary; died September 11, aged 77, of coronary occlusion.

Arthur G. Rounseville, Phoenix, Ariz.; Kansas City (Mo.) Medical College, 1889; at one time health officer of Coconino County and the city of Williams; died August 9, aged 81, of cerebral thrombosis and arteriosclerosis.

Adrian David Rubin ✠ Asbury Park, N. J.; New York Homeopathic Medical College and Flower Hospital, New York, 1930; for many years a member of the board of education; city physician; affiliated with the Monmouth Memorial Hospital in Long Branch; died August 9, aged 45, of coronary thrombosis.

Foreign Letters

ITALY

(From Our Regular Correspondent)

FLORENCE, Sept. 15, 1949.

Meeting of Gastroenterologists

At a meeting of the Piedmontese Section of the Italian Society of Gastroenterology, A. Gambigliani-Zoccoli and A. Cappa discussed the tests of parenchymal function of the liver and suggested that the azotemic curve of the urea content should be adopted as a function test. After blood had been withdrawn for the determination of the basal azotemia, the patient was given 0.17 Gm. of urea for every kilogram of body weight; blood was then withdrawn and the azotemia determined at intervals of half an hour, one hour and two, three, four and five hours. The curves obtained in the presence of a disturbance of the parenchyma were of the following types: concealed, linear, high with initial lowering and progressive increase. These curves, in the order listed, demonstrate progressively increasing parenchymal damage. The speakers reached these conclusions by comparing the results of this test with those of other function tests and by comparing the various curves with the microscopic observations made following biopsy of the liver.

The test may be useful clinically in differentiating icterus due to hepatitis from icterus due to occlusion; in the evaluation of parenchymal damage in cirrhosis and of the effect of lipotropic therapy, and in the evaluation of parenchymal damage as a residuum of hepatitis. The test is useful also for the surgeon.

Dr. Banche reported research on the variations of the chemical function of the stomach stimulated by barbituric preparations administered intravenously and on their effect on ulcers of the stomach and duodenum. The speaker discussed the variations of the chemical function of the stomach and the clinical and roentgenologic changes observed after intravenous injections of a barbituric derivative in a number of normal persons, patients with gastroenteric disease and patients with ulcers. The number of injections varied from ten to twenty, and the dose varied from 4 to 10 cc.; the compound used was isopropyl-bromoallyl-N-methylethylmalonyl urea. In 66 per cent of the treated patients a definite reduction of the values of acidity and of the amount of gastric juice excreted was observed.

The speaker observed that in general, after a first short phase of exacerbation, there was progressive clinical improvement with disappearance of pain, pronounced gain in body weight and regression of the ulcer on roentgenologic examination. In 3 patients this state of well-being continued for about one year.

The speaker pointed out that the ulcer may be the result of a severe disturbance of the neurovegetative equilibrium secondary to anatomic changes or also to persistent disturbances of the diencephalic centers of the neurovegetative system and partially to cortical disturbances. The barbituric derivative, administered intravenously, may affect the mechanism of the gastroduodenal physiopathology through a moderating sedative action on the nervous centers.

Professor Allodi emphasized the importance of the research carried out by his assistant, Dr. Banche. In his hospital department, Dr. Banche and Dr. Givogre carried out experiments on the behavior of the chemical function of the stomach during physiologic sleep and on the nocturnal secretion of the stomach. The studies conducted during physiologic sleep demonstrated that the gastric secretion is diminished in the first hours of the morning to minimum values of secretion and acidity in normal subjects and also in those affected by hypersecretion. In contrast to these observations, the secretion may be a continuous one in persons with ulcers and particularly in those with duodenal ulcers. During sleep induced by barbiturates in patients with ulcer, one observes also a pronounced diminution of the values of the chemical function. This phenomenon, according to the speaker, may be explained by considering that in physiologic sleep there is still possible the provocation of reflexes with a spinal starting point and, when the sleep is not deep, stimuli with a starting point in the superior encephalic centers may be effective, while in induced sleep conditions probably may occur which are fairly similar to those observed when the stomach is isolated completely from the superior centers, as in low vagotomy.

The results of the research on the nocturnal secretion and on the secretion in sleep induced by barbiturates also confirmed the presence of a mechanical stimulation of the chemical function of the stomach in man, a stimulation which already had been admitted by Girardi and then by Dr. Allodi in opposition to the results of the investigations on animals by Pavlov. In fact, the values of the chemical function in this person during sleep are different whether the tube is maintained in the stomach for the entire duration of the sleep or whether the tube is introduced only when the person is awakened to pump out the gastric juice.

R. Triolo discussed his attempts at topical treatment in some forms of chronic gastritis. He performed lavage of the stomach with strong protein silver and methylene blue in 10 patients with gastritis of the antrum or gastritis of the stump, in cycles of ten lavages, one on every other day. Gastroscopic examination of the patients was carried out at the end of the cure and for several months after its discontinuation, and good results were obtained from the clinical and gastroscopic points of view.

A. Gambigliani Zoccoli and C. Franzini described a new method for the rapid determination of the urobilinogen in the urine and in the feces. The method is the "two hour test" by Wazzon. By comparing the values obtained by Wazzon's two hour test with those obtained by Terwen's method of determining the twenty-four hour urobilinogen they noted a definite parallelism in the course of the elimination of the urobilinogen in the urine. Although the method does not furnish absolutely exact values, the speakers recommend it because of its simplicity and for its particular indication for the evaluation of hepatic damage and as a diagnostic aid in icterus.

PARIS

(From Our Regular Correspondent)

Oct. 5, 1949.

Hyperthyroidism

R. R. Cachera, M. Lamotte, F. Darnis and J. Raynaud (*Semaine des Hôpitaux de Paris* **25**: 1659 [May 26] 1949) measured the extracellular fluid in 14 cases of hyperthyroidism. Using the thiocyanate method they found an average of 28.5 per cent of body weight (normal, 21.1 per cent). This increase of extracellular water did not seem to be related to the basal metabolic rate. In 3 of these patients with a body weight greater than the normal range, higher values were also found for thiocyanate volume (30.4, 23.4 and 25.3 per cent), in contrast with the usual low thiocyanate volume in obesity. The high level of extracellular fluid in hyperthyroidism explains the tendency of such patients toward slight edema, as many authors have noted. After treatment, there is in all cases a diminution of the thiocyanate volume. It is remarkable that hyperthyroidism, like hypothyroidism, can increase the extracellular water content. There is probably an entirely different mechanism operating in each of these two opposite states.

Hypertension During Pregnancy

P. Milliez, C. Laroche, D. Fritel and S. Kologlu (Société de Pathologie rénale, in *J. d'urol.* **55**: 182, 1949) made careful roentgenographic examinations of the kidneys in 25 pregnant women with hypertension; in 14 cases there were evident abnormalities of the renal pelvis or of the ureters that could be seen in the pyelograms. A detailed study of these cases indicated the importance of local renal factors as a cause of hypertension during pregnancy. Pyelonephritis is the most frequent of these renal conditions and must be immediately and carefully treated. Congenital abnormalities of the ureter of the renal pelvis are also found much more frequently in pregnant women with hypertension than in normal pregnant women.

Leukoencephalitis

F. Lhermitte (to be published) made an extensive study of leukoencephalitis. Three different types must be distinguished: (*a*) perivenous encephalitis (including Hanot's hemorrhagic leukoencephalitis), (*b*) a type including multiple sclerosis and the inflammatory form of Schilder's disease and (*c*) Van Bogaert's leukoencephalitis. The first one (perivenous encephalitis) is the only true leukoencephalitis. The second type is different, as its main feature is myelonecrosis. The third type (Van Bogaert's encephalitis) is actually panmyelitis. The experimental allergic types of encephalomyelitis, which have been described by Kabat, Wolf and Bezer and confirmed by Lhermitte, belong to the first type (perivenous encephalitis). For that reason, they cannot be considered experimental multiple sclerosis from the pathologic point of view.

Creation of an Infancy Center

The executive council of the World Health Organization, jointly with the International Fund for Aid to Infants, has decided to grant aid for the establishment of an infancy center in Paris which will be an institute for research and technical information. The help of the World Health Organization will consist, among other things, of international scholarships for the study of hygiene and of the protection of infancy, social pediatry and the formation of teams of sanitarians and social visitors for the reeducation of crippled or backward children. The World Health Organization will place at the disposal of the center experts to help in teaching and research.

TURKEY

(From Our Regular Correspondent)

ANKARA, Oct. 12, 1949.

Physicians—Supply and Demand

The Istanbul medical school was established in 1826 under Sultan Mahmud II (1785-1839) and for fifty-six years was primarily supplying the army with physicians and surgeons. In 1882 a separate department for the training of physicians to serve the civilian population was established. In 1909 the two schools merged and were transferred to the new building in Haydar Pasha and became the Istanbul medical faculty of Istanbul University. During the Ottoman Empire, which terminated in 1923, there was a medical school in Damascus which drew students from the natives of that region.

The first women students were admitted to the Istanbul medical school in 1922, one year before the advent of the republic. In 1945 a medical school was opened in Ankara. In 1923 there was 1 physician to every 6,000 inhabitants. Now, after twenty-five years of the republic, there is 1 physician to every 2,500 inhabitants. The need for even more physicians is obvious. The number of students seeking admission to the medical schools has greatly increased in recent years, but, because the two schools have facilities for only 700 to 800 students, most of the 5,000 applicants have to be refused, which results in restriction and in high entrance requirements. Plans for a third medical school in the eastern provinces of Erzurum or Van have been considered often. In 1933 Istanbul University was reorganized. At the medical faculty there are at present 14 ordinarius professors, 31 associate and assistant professors, 43 private docents and 5 foreign professors. Since 1909, when the original two schools merged, army medical students have studied at the medical faculty but have continued to live at the old dormitories. At present the military medical academy has a five story dormitory under construction; after its completion, the military students of Istanbul University will pursue their studies at the Ankara medical school.

Since 1924 the Ministry of Health and Social Assistance has maintained in Istanbul a dormitory for almost 960 students. At present 659 students receive free board and maintenance and are supplied with every article of clothing and other necessities, including textbooks. In addition, they receive a monthly allowance for six years. The graduates repay the government with four years of compulsory service. Mostly they are given appointments as government physicians (medical officers of health) in malaria, trachoma and venereal disease campaigns. At the military medical academy there are at present 295 students. The number of students at Istanbul medical school in 1947-1948 was 3,107, of which 2,791 were men. In 1947-1948, 404 diplomas were issued.

The number of students of Ankara medical school in 1947-1948 at the dormitory of the ministry of health was 102, and at the army medical dormitory 165. Of a total of 541 students, only 39 women and 235 men were not living in a dormitory.

The Blood and Bone Marrow in Pellagra

Dr. Muin Memduh Tayanç, chief of the medical department of the Istanbul Municipal Cerrah Pasha Hospital, reported on his sternal puncture and bone marrow investigation in 21 patients with pellagra. Hunter's glossitis, pigmentary dermatosis on the face, hands and feet, diarrhea, asthenia, depression and advanced anemia were present in all patients. Several patients presented severe melancholia; 3 patients had undergone a stomach resection and gastroenterostomy; 1 patient had uremia, 1 had rectocolitis, and 1 patient had hemorrhagic symptoms. The megaloblastic reaction was strongly positive in 2 patients. Systematic examination of the bone marrow and circulating blood revealed: 1. Anemia of average severity was present in the circulating blood of all patients. 2. There was no leukopenia or thrombopenia, and leukopoiesis was normal; if the skin was infected, leukocytosis was present. 3. Tests of the bone marrow revealed a strongly positive erythroblastic reaction. 4. Macroblasts were not always found, but several times normoblasts and megaloblasts were observed in exhausted bone marrow. 5. There was a decrease in adult leukocytes, and toxigenic granulation was encountered several times. 6. The megakaryocyte reaction was positive in various degrees; morphologic changes were absent. 7. The plasmocyte reaction was positive. 8. Slight lymphocytosis and eosinophilia were present. Though neither the blood nor the bone marrow showed special characteristics that would lead to a definite diagnosis of pellagra, the examination of the blood is important. The presence of toxigenic granulation, erythroblasts and plasmocytes in the granulocyte count is important. The investigation of blood and bone marrow is an invaluable aid to the diagnosis and prognosis of the disease.

Correspondence

INSULIN ECONOMY

To the Editor:—An editorial on "Insulin Economy" in THE JOURNAL (**140**:1159 [Aug. 6] 1949), calls attention to the fact that the author of the article on which this editorial is based did not propose any theory to explain the action of glycine, when injected subcutaneously, on insulin behavior.

Glycine was considered particularly suited to this investigation, largely because of its outstanding specific dynamic action and its detoxifying properties within the animal body. (The author had not become aware of the investigations subsequently quoted in his article at the time when this investigation was begun.) The author had considered it possible that the diabetic state is primarily a disease of the metabolizing tissue cells, of those of muscle in particular, and that the deterioration of the islands of Langerhans is a consequence of this through the excessive demands made on them. Others have no doubt indulged in similar speculation.

Any theory involved would be concerned with the possibility that ingested glycine, which is transported to the liver immediately after its absorption by the portal vein, is there acted on (perhaps in the production of a labile combination with plasma protein) so as to become less readily available to tissue cells. Injected glycine, on the other hand, would remain more readily available until it, too, had been transported to the liver. On the basis of such speculation, experiments were started last April with a group of albino rats, one half of which received subcutaneous injections of glycine containing the radioactive carbon atom C^{14} in its methyl group, while the other half were given similar amounts of the same glycine administered orally. Samples of whole blood, plasma and cells, liver, spleen, muscle and aqueous extracts of muscle were preserved in a desiccated form for the subsequent determination of the content of C^{14}. The analyses of these have not been completed, but results thus far indicate a difference in the distribution of C^{14} in accordance with this difference in the manner of administration.

Other phenomena (which were omitted in publication, but reference to some of which was made before the Vanderbilt Medical Society) became evident when rabbits received injections of glycine. Quantitative data concerning these have thus far been difficult to obtain. One observation was the apparent effect of injected glycine on the bleeding time. When blood samples are taken by puncturing a peripheral vein of the ear, it is usually difficult to stop the flow of blood in rabbits in which the blood sugar approaches the convulsive level. In animals which had been treated with glycine, bleeding at this low level of blood sugar could readily be stopped. Frequently the flow of blood was arrested spontaneously before an entire sample (0.1 cc.) had been taken. The clotting time of blood, determined by standard methods, was not affected by the treatment with glycine. The determination of the bleeding time by standard methods did not prove practical.

Another observation concerns the well-being induced in animals by injections of glycine. The fur of some of these became unusually smooth and shiny. They seemed more alert, a condition which was indicated by the practice of ejecting their urine at anyone within range (male rabbits were used), a practice not indulged in by any of the untreated animals.

If treatment with glycine should prove of practical value it might be anticipated that diabetes at an early stage could be arrested so as to permit the reestablishment of a normal state of metabolism and the conservation of the activity of the islands of Langerhans. Anyone inclined to such speculation might also anticipate that numerous other pathologic conditions within the animal body, possibly resulting from a faulty metabolism, may also be affected by glycine injections.

J. M. JOHLIN, PH.D., Nashville, Tenn.

BLACK TONGUE

To the Editor:—I would appreciate the opportunity of commenting on the correspondence from Dr. Clarence Shaw which appeared in THE JOURNAL (**141**: 148 [Sept.] 1949).

I am greatly indebted to Dr. Shaw for his letter to the Editor in which he pointed out that I apparently overlooked the reference to the association of black tongue and penicillin therapy by Dr. Shaw in Conn's "Current Therapy" (Philadelphia, W. B. Saunders Company, 1949). I might better have stated that no case reports had appeared in the American medical journals rather than that no reference had been made to the condition. The reference to the condition in Conn's "Current Therapy" gives no indication whether this was a personal observation or was information derived from other sources.

Dr. Shaw appropriately pointed out the reference to sulfanilamide therapy and black tongue; however, it was not the purpose of the manuscript to detail the many substances which may occasion black tongue. Andrews, in "Diseases of the Skin" (ed. 3, Philadelphia, W. B. Saunders Company, 1946), alludes to Oppenheim's ability to produce black tongue by the repeated application of tinctures containing vegetable coloring matter. Andrews included no reference, but a personal communication from Dr. Oppenheim indicated that the principal offending agent was tinctura Krameria (Oppenheim, M.: *Wien. klin. Wchnschr.* No. 23, 1917). Also, Dr. Eric Barrett, Beverly Hills, Calif., states that he has observed black tongue resulting from streptomycin therapy (personal communication). Undoubtedly the list will grow with the introduction of newer therapeutic agents.

SAMUEL A. WOLFSON, M.D., Los Angeles.

BURNS DUE TO FLUORESCENT LIGHT

To the Editor:—Dr. R. Ralph Bresler in "Cutaneous Burns Due to Fluorescent Light" (J. A. M. A. **140**:1334 [Aug. 27] 1949) mentions that there has been only one previous report of this condition.

He would not, however, be expected to find a brief reference to the same condition in a more or less general review of occupational hazards. In such a review published in *Clinics* (3: 774-788, 1944) I stated, "Industrial physicians should always be on the alert for new hazards. I have already seen cases of cutaneous eruptions resulting from light sensitivities due to exposure to fluorescent light." This observation was made after seeing 2 proved cases of such eruption and 2 patients who failed to return for further observation.

J. G. DOWNING, M.D., Boston.

BENJAMIN WATERHOUSE

To the Editor:—At the bottom of page 254 in THE JOURNAL, Sept. 24, 1949, is a quotation from a release from the Surgeon General's Office which begins: "In 1800, Benjamin Waterhouse, an Army surgeon, brought vaccination to the United States." I could not help raising an eyebrow at this description of Waterhouse, who held the initial appointment as professor of the theory and practice of physic at Harvard at the time of his historic accomplishment.

Waterhouse resigned from his professorship in 1812 after a bitter wrangle with his colleagues, and according to the Dictionary of American Biography, ". . . in 1813 Madison appointed him medical superintendent of all the military posts in New England, a position which he held until 1820."

If the Surgeon General's office would say, "In 1800, Benjamin Waterhouse, first professor of the theory and practice of physic at Harvard Medical School, who thirteen years later became an Army surgeon, brought vaccination to the United States," the cause of historical accuracy would be better served.

HOWARD N. SIMPSON, M.D., Springfield, Mass.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS. *Part III.* Boston, Chicago and New York, January. *Parts I and II,* Feb. 13-15. Centers where there are approved medical schools and five or more candidates. Exec. Sec., Mr. E. S. Elwood, 225 S. 15th Street, Philadelphia 2.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY: *Written.* Various locations. July 21. *Oral.* Philadelphia, April 23-27, Chicago, October 8-12. Sec., Dr. Curtiss B. Hickcox, 745 Fifth Ave., New York 22.

AMERICAN BOARD OF INTERNAL MEDICINE: *Oral.* Chicago, Feb. 8-10. Boston, April 13-15. San Francisco, June 21-23. The oral examinations in the subspecialties will be held at the same time and places. Final date for filing applications for all examinations is Jan. 1. Asst. Sec., Dr. William A. Werrell, 1 West Main Street, Madison 3, Wis.

AMERICAN BOARD OF NEUROLOGICAL SURGERY: *Oral.* Chicago, June 3. Final date for filing applications is Jan. 1. Sec., Dr. W. J. German, 789 Howard Ave., New Haven, Conn.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY, INC. *Written and Reviews of Case Histories. Part I.* Various Centers. Feb. 3. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

AMERICAN BOARD OF OPHTHALMOLOGY: Boston, April. Sec. Dr. Edwin B. Dunphy, 56 Ivie Rd., Cape Cottage, Maine.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY. *Part II,* New York City, Feb. 9-10. Sec. Treas., Dr. Harold A. Sofield, Room 1856, 122 S. Michigan Ave., Chicago.

AMERICAN BOARD OF PLASTIC SURGERY: Examinations are given in June and November of each year in the home town of applicants. Sec.-Treas., Dr. Louis T. Byars, 400 Metropolitan Bldg., St. Louis, Mo.

AMERICAN BOARD OF UROLOGY: *Written.* Various Centers, Dec. 3. *Oral and Clinical.* Chicago, Feb. 11-15. Sec., Dr. Harry Culver, 7935 Sunnyside Road, Minneapolis 21.

BOARDS OF MEDICAL EXAMINERS

ALABAMA: *Examination.* Montgomery, June 27-29. Sec., Dr. D. G. Gill, 519 Dexter Avenue, Montgomery.

ALASKA: Juneau, March 7. Sec., Dr. W. M. Whitehead, Box 140, Juneau.

COLORADO: * Denver, Jan. 3-6. Sec., Dr. George H. Gillen, 831 Republic Building, Denver.

DELAWARE: *Examination.* Dover, Jan. 10-12. *Reciprocity.* Dover, Jan. 19. Sec., Dr. J. S. McDaniel, 229 State Street, Dover.

FLORIDA: * *Examination.* Jacksonville, Nov. 27-29. Sec., Dr. Frank D. Gray, 12 N. Rosalind Ave., Orlando.

GUAM: *Endorsement.* Agana, last Friday of each month. Sec., Capt. C. K. Youngkin, Dept. of Public Health, Guam, % F.P.O., San Francisco.

HAWAII: *Examination.* Honolulu, Jan. 9-12. Sec., Dr. I. L. Tilden, 881 S. Hotel St., Honolulu.

IDAHO: Boise, Jan. 9. Exec. Sec., Mr. Armand L. Bird, 305 Sun Building, Boise.

INDIANA: *Examination.* Indianapolis, June. Sec., Dr. Paul R. Tindall, 1138 K. of P. Bldg., Indianapolis.

IOWA: * *Examination.* Des Moines, Dec. 5-7. *Reciprocity.* Des Moines, Nov. 7, Dec. 5. Sec., Dr. M. A. Royal, 506 Fleming Bldg., Des Moines.

KANSAS: Topeka, Dec. 8-9. Sec., Dr. J. F. Hassig, 905 N. Seventh St., Kansas City.

KENTUCKY: Louisville, Dec. 12-14. Sec., Dr. Bruce Underwood, 620 South Third Street, Louisville 2.

LOUISIANA: New Orleans, Dec. 8-10. Sec., Dr. Roy B. Harrison, 1507 Hibernia Bank Building, New Orleans 12.

MARYLAND: *Examination.* Baltimore, Dec. 13-16. Sec., Dr. Lewis P. Gundry, 1215 Cathedral St., Baltimore 1. *Homeopathic. Examination.* Baltimore, Dec. 13-14. Sec., Dr. John A. Evans, 612 West 40th St., Baltimore.

MISSISSIPPI: *Reciprocity.* Jackson, December. Sec., Dr. Felix J. Underwood, State Board of Health, Jackson 113.

NEW HAMPSHIRE: Concord, March 8-9. Sec., Dr. John S. Wheeler, 107 State House, Concord.

NORTH CAROLINA: *Endorsement.* Raleigh, Jan. 23. Sec., Dr. Ivan Procter, 226 Hillsboro St., Raleigh.

NORTH DAKOTA: *Examination.* Grand Forks, Jan. 4-6. *Reciprocity.* Jan. 7. Sec., Dr. C. J. Glaspel, Grafton.

OHIO: *Examination.* Columbus, Dec. 12-14. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

OKLAHOMA: * *Examination.* Oklahoma City, June 7-8. Sec., Dr. Clinton Gallaher, 813 Braniff Building, Oklahoma City.

OREGON: * *Examination.* Portland, January. Exec. Sec., Mr. Howard I. Bobbitt, 608 Failing Building, Portland 4.

PENNSYLVANIA: *Examination.* Philadelphia or Harrisburg, January. Acting Sec., Mrs. Marguerite G. Steiner, 351 Education Building, Harrisburg.

PUERTO RICO: *Examination.* Santurce, March 7. Sec., Mr. Luis Cueto Coll, Box 3717, Santurce.

SOUTH DAKOTA: * Sioux Falls, Jan. 17. Sec., Dr. C. E. Sherwood, 300 First National Bank Building, Sioux Falls.

UTAH. *Examination.* Salt Lake City, June. Dir., Dr. Frank E. Lees, 324 State Capitol Building, Salt Lake City.

VIRGINIA: *Examination.* Richmond, Dec. 2-3. *Reciprocity.* Richmond, Dec. 1. Sec., Dr. K. D. Graves, 631 First St., S.W., Roanoke.

WASHINGTON: * Seattle, January. Director, Department of Licenses, Mr. Edward C. Dohm, Olympia.

WISCONSIN: * *Examination.* Madison, Jan. 10-12. Sec., Dr. C. A. Dawson, River Falls.

* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

ARIZONA: *Examination.* Tucson, Dec. 20. Sec., Mr. Francis A. Roy, Science Hall, University of Arizona, Tucson.

COLORADO: *Examination.* Denver, Dec. 7-8. Sec., Dr. Esther B. Starks, 1459 Ogden Street, Denver.

OKLAHOMA: *Examination.* Oklahoma City, April 11. Sec., Dr. Clinton Gallaher, 813 Braniff Building, Oklahoma City.

OREGON: Portland, Dec. 3. Sec., Mr. Charles D. Byrne, State Board of Higher Education, Eugene.

SOUTH DAKOTA: Vermillion, Dec. 2-3. Sec., Dr. Gregg M. Evans, 310 E. 15th St., Yankton.

TENNESSEE: *Examination.* Memphis, Dec. 30-31. Sec., Dr. O. W. Hyman, 874 Union Avenue, Memphis 3.

WASHINGTON: Seattle, January. Sec., Department of Licenses, Mr. Edward C. Dohm, Olympia.

WISCONSIN: Milwaukee, Dec. 3. Madison, April 1. Sec., Prof. W. H. Barber, Ripon College, Ripon.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Workmen's Compensation Acts: Proper Selection of Medical Panel.—The appellant filed a claim for compensation for disability resulting from an occupational disease. An award was granted, but the appellant appealed to the Supreme Court of Idaho.

Since the claim involved a medical question, a medical panel was selected by the board and reference made thereto. The appellant contended that this medical panel had been improperly selected.

Section 72-1227 of the Idaho statutes provides that the governor shall appoint, from recommended eligible persons, a silicosis panel of six physicians, four of whom shall have had at least five years' experience in silicosis and two in roentgenology. As needed, the board shall select three of these for a medical panel. In this case the board selected two from such silicosis panel of six; the third, though formerly a member, was not then one of the six appointed by the governor for the pertinent period.

The functions of a grand jury are similar to those of the medical panel, said the Supreme Court. Those serving on a grand jury must be properly selected and, on a parity of reasoning, if the medical panel is not selected in accordance with the statute, it would not be a legal body—hence its decision, though unanimous, would be a nullity. The terms of the statute relating to the appointment of the panel are controlling, and, in mandatory terms, they require the medical panel to be drawn from the silicosis panel. This was not done, said the Supreme Court. No properly constituted medical panel having considered the appellant's case, the court concluded, the award in favor of the appellant was set aside and the cause was remanded to the board to refer the claim to a valid panel.—*Munroe v. Sullivan Mining Co., 207 P. (2d) 547 (Idaho, 1949).*

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1938 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American J. Obstetrics and Gynecology, St. Louis

57:1037-1238 (June) 1949

Nutrition and Human Reproduction: Historical Review. R. D. Mussey. —p. 1037.
Medicine's Response to Challenge of Our Time. R. B. Allen.—p. 1049.
Survey of 113 Cases of Primary Dysmenorrhea Treated by Neurectomy. O'D. Browne.—p. 1053.
Operative Procedures for Treatment of Sterility and Ovarian Dysfunctions. J. L. Reycraft.—p. 1069.
Study and Classification of Pelvic Inflammatory Disease. R. W. Mohler. —p. 1077.
Retroperitoneal Lymph Node Dissection in Cancer of Cervix. J. V. Meigs, L. Parsons and I. T. Nathanson.—p. 1087.
Attack upon Delay Period in Diagnosis of Pelvic Cancer with Further Observation of Philadelphia Study. J. Y. Howson and T. L. Montgomery.—p. 1098.
*Clinical and Pathological Studies of Feminizing Tumors of Ovary. F. H. Falls, A. B. Ragins and M. Goldenberg.—p. 1107.
Nonneoplastic Ovarian Cysts: Their Relation to Spiral Arteries in Human Ovary. B. Delson.—p. 1120.
*Early Diagnosis of Carcinoma of Cervix with Emphasis on Routine Biopsy. F. R. Lock and J. B. Caldwell.—p. 1133.
Ectopic Pregnancy, Mortality and Morbidity Factors. C. G. Collins, W. D. Beacham and D. W. Beacham.—p. 1144.
Know the Pelvis. W. T. Kennedy.—p. 1155.
Report on Cesarean Sections Done in St. Vincent's Hospital, New York. J. P. Hennessy.—p. 1167.
Role of Penicillin in Obstetrics. L. M. Harris and D. M. Shook.—p. 1186.
Continuous Spinal Anesthesia in Cesarean Section. C. B. Lull and J. C. Ullery.—p. 1199.
Elderly Primigravid Women. L. M. Randall and J. C. Taylor.—p. 1210.

Feminizing Tumors of Ovary.—Falls and associates reviewed the feminizing ovarian tumors in the surgical material at Cook County Hospital collected from July 1931 through December 1946. A total of 1,622 tumors of the ovary were examined. Of these, 59, or 3.6 per cent, were feminizing tumors, the granulosa cell group comprising 1.78 per cent and the theca cell group 1.82 per cent. Thirty-nine cases of feminizing tumor of the ovary were available for study. The incidence was found to be 10 per cent greater than expected in the Negro race, which was due almost entirely to the increased occurrence of theca cell tumor among the Negroes. Of the granulosa cell tumors, 9, or 31 per cent, were malignant, and these occurred mostly in the older age group, beyond the third decade. The incidence of theca cell tumor was found to be 23 per cent greater in the Negro race than expected. Postmenopausal bleeding is not indicative of feminizing tumor of the ovary until other pathologic conditions have been ruled out. Feminizing tumor of the ovary with postmenopausal bleeding may be associated with and obscured by other pelvic disease. The absence of postmenopausal bleeding does not rule out the possibility of feminizing tumor of the ovary.

Routine Biopsy in Early Diagnosis of Carcinoma of Cervix.—Lock and Caldwell say that in the clinics of the Bowman Gray School of Medicine and the North Carolina Baptist Hospital a cervical biopsy is performed in every case in which the appearance of the cervix shows any deviation from the normal. The results of this policy over a five year period have been reviewed. During 10,014 visits 1,979 biopsy specimens were taken and 165 cases of cervical carcinoma were discovered. Thirteen of the 165 patients with carcinoma of the cervix had no symptoms. In 17 only leukorrhea was present. The remainder had other symptoms suggestive of genital cancer. Of this series of patients, 72.7 per cent had stage 1 or stage 2 involvement. Twenty-nine cases of carcinoma were discovered which were clinically considered to be benign cervical disease. The policy of performing a biopsy in every case in which any abnormality of the cervix is observed has resulted in the diagnosis of increasing numbers of early cases of cervical cancer.

American Journal of Ophthalmology, Chicago

32:625-762 (May) 1949

Studies on Clinical Physiology of Cornea: Interrelationship of Corneal Turgescence, Epithelial Edema, Bullous Keratopathy, and Interstitial Vascularization. D. G. Cogan.—p. 625.
Operation for Chronic Primary Glaucoma: Goniodialysis Combined with Sclerectomy and Iris Inclusion. J. Laval.—p. 634.
Sutures Used in Cataract Surgery: Review. D. P. Bell.—p. 639.
Amount of Eye Movement Objectively Perceptible to Unaided Eye. E. Ludvigh.—p. 649.
Regeneration of Nerves in Experimental Corneal Grafts in Rabbits: Clinical and Histologic Study. W. Kornblueth, A. E. Maumenee and J. E. Crowell.—p. 651.
Case of Sensitivity to Gold-Ball Orbital Implant: Eczematous Contact-Type Dermatitis Due to 14-Karat Gold. H. W. Forster Jr. and R. F. Dickey.—p. 659.
Heparinization of Eye. M. W. Bick.—p. 663.
Preservation of Rabbit Cornea Following Exposure to Capacitron. T. D. Duane and O. S. Lee.—p. 671.
Self-Sterilizing Ophthalmic Solutions. S. D. McPherson Jr. and R. M. Wood.—p. 675.
Prevention of Infection in Eye Surgery. M. H. Post Jr.—p. 679.
Ocular Complications of Temporal Arteritis. C. Smith and P. B. Greene. —p. 685.
Chronic Serpiginous Ulcer of Cornea (Mooren's Ulcer): Etiologic and Therapeutic Considerations. J. G. Linn Jr.—p. 691.

Annals of Allergy, Minneapolis

7:301-442 (May-June) 1949. **Partial Index**

Mold Fungi in Etiology of Respiratory Allergic Diseases: IX. Further Studies with Mold Extracts. H. E. Prince, S. Epstein, K. D. Figley and others.—p. 301.
*Use of Antihistaminic Drugs in Human Tuberculosis: Preliminary Report. A. R. Judd and A. R. Henderson.—p. 306.
Clinical Evaluation of Neohetramine in Allergic Diseases. E. Schwartz and J. Reicher.—p. 320.
*Allergy and Tonsil Problem in Children. N. W. Clein.—p. 329.
Study of Incidence of Air-Borne Fungi in City of Rio de Janeiro. N. Passarelli, M. Pinto de Maranda and C. de Castro.—p. 334.
Sinusitis, Allergy and Bacterial Vaccine. K. A. Baird.—p. 339.
"Cerebral Edema" due to Phenobarbital Sensitivity: Clinical Study of Case. C. M. Jenkins.—p. 346.
Bacterial Allergy: Extreme Hypersensitization Commonly Found in Chronic Brucellosis. J. F. Griggs.—p. 350.
Diagnosis and Treatment of Perennial Allergic Coryza. A. L. Maietta. —p. 359.
New Antihistaminic Compound for Treatment of Urticaria and Hay Fever. S. N. Saletta.—p. 366.

Antihistaminic Drugs in Tuberculosis.—Judd and Henderson state that primary tuberculosis is characterized by relative benignity and absence of tissue destruction. These characteristics are reversed in the reinfection or secondary phase. The reversal is dependent on hypersensitivity to an antigen developed during the primary phase. On reinfection or spread of the bacilli from a primary site, there occurs an inflammatory reaction characterized by exudation. If this acute inflammation could be prevented, it seemed possible that antihistaminic drugs might protect sensitized cells from injury and thus alter the course of the disease. The drugs employed were diphenhydramine (benadryl®), tripelennamine (pyribenzamine®), phenindamine (thephorin®), and thonzylamine (neohetramine®). A total of 30 patients is presented in this preliminary report. These included cases of tuberculous pneumonia, acute exudative lesions, mixed exudative and fibrotic lesions and advanced chronic fibrotic lesions. The greatest improvement occurred in patients with tuberculous pneumonia and other acute exudative lesions, which seem to be the result of hypersensitivity. The antihistamine drugs become less effective as the lesions progress in chronicity. The clinical improvement accompanying the administration of the antihistamines strongly points to the therapeutic effectiveness of these drugs even though improvement lasted only during the administration. The combined administration of antihistaminic drugs to suppress the allergic components of the disease and of streptomycin to suppress the growth of the bacillus may be effective.

Allergy and Tonsils.—This study by Clein was initiated twenty years ago to discover whether tonsils and adenoids "grew back" because of faulty surgical technic or some unknown factor. Children whose tonsils and adenoids "grew back" following tonsillectomy and adenoidectomy were found to be those who had undiagnosed and untreated allergic disease.

When the allergic symptoms are properly treated in children who require removal of tonsils and adenoids, the incidence of regrowth of lymphoid tissue in the tonsil fossae is negligible—3 per cent compared to 27 per cent in undiagnosed, untreated allergic conditions. All children in this category should have a thorough allergic study. Symptoms of allergic disease are usually not relieved by removal of tonsils and adenoids. Early diagnosis and specific treatment are the most effective measures for symptoms due to allergic disease.

Archives of Dermatology and Syphilology, Chicago

59:595-680 (June) 1949

*Treatment of Early Syphilis with Penicillin Injection in Oil and Wax U.S.P.: Report of 153 Cases. L. Chargin, N. Sobel, C. Rein and T. Rosenthal.—p. 595.
*Scleroma: Review of Literature and First Report of Multiple Familial Occurrence in United States. P. R. Kline and E. R. Brody.—p. 606.
Mammalian Tyrosinase: Melanin Formation by Ultraviolet Irradiation. T. B. Fitzpatrick, A. B. Lerner, E. Calkins and W. H. Summerson.—p. 620.
Massive Metastasizing Meningioma Involving the Scalp. C. W. Laymon and F. T. Becker.—p. 626.
Balanitis Xerotica Obliterans: Report of Case. D. G. Welton and P. Nowlin.—p. 636.
*Roentgen Therapy for Hyperhidrosis: Observation of 122 Patients. J. Borak, J. J. Eller and W. D. Eller.—p. 644.
Persistent Multiple Herpes-Like Eruption: Response to Repeated Intradermal Injections of Smallpox Vaccine. L. E. Savitt and S. Ayres Jr.—p. 653.

Treatment of Early Syphilis.—Chargin and co-workers treated 199 ambulatory patients, 134 men and 65 women, between the ages of 16 and 68 years, with early stages of syphilis by a sixteen day schedule employing a total of 4,800,000 units of penicillin in oil and wax. Forty-six of the patients were lost from observation, and 153 were observed for eight to fourteen months. The results were compared with those of two eight day schedules employing a total of 4,800,000 units of penicillin in oil and wax. The results were outstanding in primary seronegative syphilis, approaching a satisfactory outcome for 100 per cent of the patients treated by any of the schedules under consideration. Results obtained in patients with seropositive primary syphilis were satisfactory for 92 per cent as compared to satisfactory results for 60 per cent and 86.2 per cent of those following the two eight day schedules. Results were satisfactory for 74.7 per cent of the patients with secondary syphilis, as compared to satisfactory results for 29.8 and 62.6 per cent of those following the two eight day schedules. The longer schedule gave more satisfactory results for all categories. With the sixteen day schedule the results with primary seronegative and seropositive syphilis are eminently satisfactory. The results are less striking in secondary syphilis.

Scleroma.—According to Kline and Brody, 13 of the 102 cases of scleroma reported in the United States were in native-born Americans. The authors present the first report of multiple occurrence of scleroma in the United States in one family. The patient was a woman aged 41, of foreign parentage but born in America. She complained of swelling of eight years' duration about the upper lip and nose, and of persistent coryza and tenderness in the nose. Obstruction of the nasal passage had caused some respiratory difficulty. A biopsy from a nodule on the upper lip revealed a scleroma. The patient was given a total of 1,750 r and 70 milligram hours of gamma radium to each nostril on three separate occasions. After the radiation therapy the patient was given three injections of antimony potassium tartrate intravenously and subsequently twelve injections of potassium iodide intravenously at weekly intervals. Complete healing resulted without any evidence of recurrence. The patient had two brothers who were affected with this disease. Scleroma is seldom the primary cause of death. The disease is definitely infectious and probably contagious. No definite conclusion has been reached as yet as to the degree of contagiousness. The possibility of familial transmission and contagiousness of scleroma is still in doubt. Poverty, malnutrition and lack of personal cleanliness favor development of the disease. There is an actual numerical increase in scleroma throughout the entire world.

Roentgen Therapy for Hyperhidrosis.—Borak and co-workers treated 122 patients with hyperhidrosis with roentgen rays. Seventy-six of the patients were of light complexion and blond or light eyed or both. Through a filter of at least 2 mm., and preferably 4 mm., of aluminum, a dose of 300 r in air was given, and half of this dose was added twice at intervals of ten days. This treatment was repeated in the same manner after a period of four weeks. Thus a total dose of 1,200 r in air (about 1,600 r on the skin) was administered in six sessions within a period of eight weeks. The distance between the focus and the skin was 35 cm. for the treatment of the axillas, 35 to 40 cm. for the treatment of the palms and 40 to 45 cm. for the treatment of the soles. From two to eighteen years have elapsed since the termination of treatment of each patient. Thus far, no evidence of roentgen ray injury to the skin has been observed in any of the patients. With this technic, even those with blond skin seem to tolerate the dosage well. All patients have shown pronounced improvement, which was noticed about three weeks after the first series of treatments. Results were so satisfactory for a large number of patients in this series that further treatment has not appeared necessary. In order to avoid excessive dryness of irradiated areas, treatment should be discontinued after a 75 per cent improvement has been obtained. No more than two series of treatment should be given. The absence of roentgen injury to the skin is to be attributed to the filtration. The use of unfiltered rays is the most important cause of failures in roentgen therapy of hyperhidrosis.

Archives of Neurology and Psychiatry, Chicago

61:467-598 (May) 1949

*Thymectomy in Treatment of Myasthenia Gravis: Report Based on 32 Cases. L. M. Eaton, O. T. Clagett, C. A. Good and J. R. McDonald.—p. 467.
Cysticercosis Cerebri and Its Operative Treatment. L. Stepień and J. Choróbski.—p. 499.
Scoliosis as Manifestation of Disease of Cervicothoracic Portion of the Spinal Cord. E. Boldrey, J. E. Adams and H. A. Brown.—p. 528.
Destruction of Nerve Cells by Rickettsial Organisms of Tsutsugamuchi Fever. J. W. Papez and J. F. Bateman.—p. 545.
Pial-Medullary Angiomas: Clinicopathologic Features and Treatment. R. C. Bassett, M. M. Peet and J. F. Holt.—p. 558.
Relation of Changes in Carbohydrate Metabolism to Psychotic States. H. Freeman and R. N. Zaborenke.—p. 569.
*Capillaroscopic Observations in Cases of Multiple Sclerosis. L. V. Chiavacci and T. J. Putnam.—p. 577.

Thymectomy in Myasthenia Gravis.—Eaton and associates studied the relationship between the thymus and myasthenia gravis. The great majority of patients with myasthenia gravis who had been seen before 1941 at the Mayo Clinic had had stereoscopic roentgenograms of the thorax, but the authors did not find in previous records a single instance of unequivocal diagnosis of thymic tumor. Abnormal shadows in the anterior part of the mediastinum had been detected occasionally. Clinicians had suspected that they were cast by tumors of the thymus; however, the roentgenologists had been unable to attribute them definitely to the thymus. In a study of 206 consecutive cases of myasthenia gravis since 1941, diagnosis of thymic tumors was made in 33 by roentgenologic methods. The accuracy of the roentgenologic diagnosis was verified surgically in 20 cases and at necropsy in 4. In only 1 of the 33 cases did operative intervention fail to vertify the presence of a thymic tumor. In the remaining 8 cases the roentgenologic evidence of a mass in the anterior part of the mediastinum was unequivocal, but the opportunity for verification at operation or necropsy has not arisen. The authors discuss the pertinent clinical data in the aforementioned 32 cases and cite clinical histories in 10. Proper roentgenologic technic reveals evidence of thymic tumor in approximately 15 per cent of patients with myasthenia gravis. This figure approximates closely the true incidence of thymic tumor in this disease. An analysis of the results obtained for 15 patients with myasthenia gravis and associated thymic tumor and for 17 patients without thymic tumor who underwent surgical removal of the thymus shows that 60 per cent of the patients were improved four and a half years to one-half year after the operation. Although these results are encouraging, they must not be considered conclusive evidence that thymectomy is of value in the treatment of myasthenia gravis. In certain cases a thymic tumor is present before the onset of the symptoms of myasthenia gravis. Roentgen irradiation of the thymus may be of value in the treatment. A conclusive opinion as to the value of thymectomy awaits a careful study of a larger number

of cases over a longer period, and comparison of the course of the disease in patients treated surgically with the course in patients receiving medical treatment only.

Capillaroscopic Observations in Multiple Sclerosis.—Chiavacci and Putnam say that disturbances in circulation have long been described as part of the histologic picture of multiple sclerosis. Putnam attempted a systematic survey of the hypothesis that the characteristic lesions of multiple sclerosis are the result of vascular closure. Spotty areas of demyelination, with relative preservation of axis cylinders and a purely ectodermal type of repair, may be produced by experimental venous obstruction, or may be observed in conjunction with a variety of lesions which embarrass the venous return. He describes results of a search for alterations in the capillaries in the region most accessible to direct observation in the living patient, namely, the nail bed. Observations were made on 48 patients with multiple sclerosis, selected from a larger series on the grounds of certainty of diagnosis, cooperativeness and convenience. For control, 9 persons employed about the laboratory were observed. The authors found that almost all 48 patients (19 men and 29 women) showed alteration of the capillaries, consisting mainly in spasticity, sluggishness or absence of circulation and thickening of intermediate parts of the loop. The capillary observations did not correspond with the severity of the patient's clinical condition. These observations seem to point to the primary nature of vascular changes in multiple sclerosis. The authors believe that the presence of abnormalities in capillary pattern in association with neurologic signs and symptoms may prove reliable, though not infallible, evidence in favor of the diagnosis of multiple sclerosis. These investigations will be continued on a larger scale with respect to the influence of various chemical and physical agents on the capillary shape.

Archives of Surgery, Chicago

58:565-730 (May) 1949. **Partial Index**

More Human Attitudes in Surgical Practice: Presidential Address. H. B. Zimmermann.—p. 565.
Revascularization Following Experimental Mesenteric Vascular Occlusion. R. J. Noer and J. W. Derr.—p. 576.
Use of Portacaval Anastomosis in Portal Cirrhosis. A. C. Pattison. —p. 590.
Use of Heparin and Dicumarol in Active Treatment of Thromboembolism. J. H. Olwin.—p. 603.
*Diagnosis and Surgical Treatment of Patent Ductus Arteriosus. W. J. Potts, S. Gibson, S. Smith and W. L. Riker.—p. 612.
Repair of Defects in Ethmoid and Frontal Sinuses Resulting in Cerebrospinal Rhinorrhea. A. W. Adson and A. Uihlein.—p. 623.
*Pseudohemophilia or Chronic Thrombasthenia. C. W. McLaughlin Jr. —p. 635.
Surgical Treatment of Benign and Secondarily Malignant Tumors of Esophagus. S. W. Harrington.—p. 646.
Surgical Treatment of Carcinoma of Esophagus and Stomach. H. L. Thompson.—p. 662.
Treatment of Jejunal Ulcer: Comparative Follow-Up Study. H. K. Ransom.—p. 684.
Polyposis of the Colon. E. L. Strohl and G. V. Pontius.—p. 708.
Situs Inversus Totalis: Statistical Review of Data on 76 Cases with Special Reference to Disease of Biliary Tract. C. W. Mayo and R. G. Rice.—p. 724.

Patent Ductus Arteriosus.—Potts and co-workers operated on 52 children between the ages of 2 and 13 years with patent ductus arteriosus. A continuous murmur over the base of the heart was the outstanding important physical observation. The diagnosis was confirmed at operation in each case. Two patients had raucous systolic murmurs, which had a slight carry-over into diastole. In these 2 patients there was no patent ductus but an abnormal opening in the common wall of the aorta and the pulmonary artery just beyond their emergence from the ventricles. In the other 50 cases the size of the patent ductus varied from 4 to 12 mm., except for 1 patient who had a ductus measuring 18 mm. in diameter. Twenty ducti were ligated; 30 ducti were divided and sutured with the use of a clamp which has rows of extremely fine teeth in apposing jaws, which may lessen the danger of uncontrollable hemorrhage due to slipping clamps. Hemorrhage occurred in 4 instances and was controlled in all without much difficulty. There were no deaths. Surgical treatment is advised for all typical patent ducti in children between the ages of 2 and 12 years.

Pseudohemophilia or Chronic Thrombasthenia.—McLaughlin considers pseudohemophilia and chronic hereditary thrombasthenia as two distinct entities. Both conditions present themselves as a hemorrhagic diathesis, usually familial in type but not sex linked. Pseudohemophilia is a more clearly established condition in which the principal diagnostic feature is a persistently prolonged bleeding time. Coagulation time may be normal in pseudohemophilia and in hereditary chronic thrombasthenia, while thrombocyte count may be increased in the first condition and normal or low in the latter. Clot reaction is usually normal in pseudohemophilia and prolonged in chronic thrombasthenia. Two cases classified as instances of pseudohemophilia in male children aged 18 months and 1 year are reported. There is no specific therapy for pseudohemophilia. Continued bleeding from a deep dog bite in the cheek of one child and persistent bleeding from a small wound in the tongue of the other patient were controlled by blood transfusions and by closing the wound with deeply placed sutures tied over pieces of gelfoam.® Both patients survived. Pseudohemophilia is seldom fatal, the bleeding tendency usually becoming less pronounced with advancing years. Surgical treatment should be avoided unless absolutely required.

Blood, New York

4:697-792 (June) 1949

Chronic Congenital Aregenerative Anemia (Pure Red-Cell Anemia) Associated with Iso-Immunization by Blood Group Factor "A." C. H. Smith.—p. 697.
Mediterranean Anemia in Negro: Report of 4 Cases and Their Families. S. O. Schwartz and J. Mason.—p. 706.
Rapid Slide Test for Heterophile Antibody in Infectious Mononucleosis. W. C. Moloney and Lucy Malzone.—p. 722.
Parallel Effects of Magnesium on Complementary and Coagulative Activities of Blood Serum. F. Maltaner and J. O. de Almeida.—p. 728.
Absence of Heterophile Reaction in Spinal Fluid in Infectious Mononucleosis. H. A. Lyons and J. G. Harrison.—p. 734.
Factor in Serum which Accelerates Conversion of Prothrombin to Thrombin: II. Its Evolution with Special Reference to Influence of Conditions Which Affect Blood Coagulation. B. Alexander, A. de Vries and R. Goldstein.—p. 739.
Id.: III. Its Relationship to Coagulation Defect of Thrombocytopenic Blood. B. Alexander and A. de Vries.—p. 747.
Studies on Hemophilia: V. Coagulation Defect in Hemophilia with Particular Reference to Conversion of Prothrombin to Thrombin and Evolution of Prothrombin Conversion Accelerator. B. Alexander and A. de Vries.—p. 752.
Lymphatic Leukemia and Lymphatic Leukemoid States in Cancer of Stomach. J. Bichel.—p. 759.
Lymphocytic Leukemoid Reaction of Blood Associated with Miliary Tuberculosis. F. H. Gardner and S. R. Mettier.—p. 767.

California Medicine, San Francisco

70:445-522 (June) 1949

Approach to Some Non-Clinical Responsibilities of Medicine. E. V. Askey.—p. 445.
Surgical Treatment of Esophageal Hiatus Hernia by Transthoracic Herniotomy: Preliminary Report. R. Cohn and L. Heaton.—p. 449.
*Diagnosis and Surgical Treatment of Tetralogies. Mary B. Olney. —p. 453.
Sickle Cell Disease Simulating Advanced Rheumatoid Arthritis: Report of Case. E. L. Coodley and M. J. Kert.—p. 459.
Myelography: Diagnostic Value in Lesions of Lumbar Intervertebral Disks with Variation in Technic. C. E. Grayson and H. A. Black. —p. 464.
Differential Diagnosis of Rheumatism: Clinical Study of 500 Cases. J. J. Furlong.—p. 472.
Neck and Shoulder Pain. A. Fields and J. Hoesley.—p. 478.
The "Nursing Crisis." T. C. McVeagh.—p. 483.
Potassium Permanganate Soaks in Peripheral Vascular Diseases to Emphasize Nail Growth Changes. R. J. Popkin.—p. 485.
Food Handler's Infection (Swine Erysipelas) in Man. M. Debenham. —p. 486.

Diagnosis and Surgical Treatment of Tetralogies.—Olney presents a review of 20 cases of congenital heart disease of the cyanotic type. In 15 of these the clinical diagnosis of tetralogy of Fallot was proved surgically. In the 5 other cases in which the clinical diagnosis was questionable, operation disclosed that tetralogy was not present. The author stresses that patients with congenital heart disease of the cyanotic type may be assumed to be candidates for surgical treatment if the examination of the heart reveals murmurs characteristic of an interventricular septal defect, overriding aorta and pulmonary stenosis; if the electrocardiogram shows right axis deviation; if the roentgen or fluoroscopic study demonstrates decreased pul-

monary markings, and if iodized poppyseed oil injection shows right ventricular enlargement, a septal defect, overriding of the aorta and small pulmonary arteries. In some cases some of these criteria may be missing. If there are not definite contraindications, exploratory thoracotomy is indicated for patients with congenital heart disease causing cyanosis.

Canadian Medical Association Journal, Montreal

60:549-648 (June) 1949. **Partial Index**

*Initial Clinical Experience with Antabuse. F. Gelbman and N. B. Epstein.—p. 549.
Vitamin B_{12} in Pernicious Anemia. J. Kaufmann and A. Cooperberg.—p. 552.
Anuria. C. H. W. Weinlos and C. B. Rich.—p. 555.
Air Travel for the Incapacitated. K. E. Dowd.—p. 558.
Electronarcosis. J. J. Geoghegan.—p. 561.
Basic Principles of Pediatric Anesthesia. C. R. Stephen and H. M. Slater.—p. 566.
Alberta's Tuberculosis Program. A. H. Baker.—p. 572.
Review of Trachoma. W. B. Murray.—p. 574.
Congenital Blindness (Pseudoglioma) Occurring as Sex-Linked Developmental Anomaly. W. M. G. Wilson.—p. 580.
Primary Resection of Colon in Ulcerative Colitis. G. G. Miller, C. M. Gardner and C. B. Ripstein.—p. 584.
Diagram Illustrating Results Given by Copper Sulphate Method of Phillips, Van Slyke et al. A. Bertrand.—p. 586.
Traumatic Rupture of the Thoracic Aorta. H. K. Fidler.—p. 590.
Surgical Treatment of Patent Ductus Arteriosus. R. Robertson.—p. 595.
Fascial Suspension of the Vagina. N. M. Guiou.—p. 600.
Protein-Bound Plasma Iodine as Aid in Diagnosis of Thyroid Disease. W. F. Perry and J. B. R. Cosgrove.—p. 602.
Production of Visceral Lesions Following Attempted Chronic Irritation of Central Nervous System. M. Schachter and R. Schachter.—p. 607.
*Death Following Ingestion of Alcohol in Antabuse Treated Patient. R. O. Jones.—p. 609.

Clinical Experience with Antabuse.—Gelbman and Epstein treated 55 patients, 46 men and 9 women, between the ages of 22 and 64, with tetraethylthiuramdisulfide (antabuse). Each patient, accompanied by a relative, close friend, social worker or member of Alcoholics Anonymous, was given a brief talk about the treatment, and then swallowed four tablets, 0.5 Gm. each. Each patient was given five tablets to take home. He was instructed to take three tablets on the following morning, two on the second morning and to report back to the Institute of Psychiatry with someone on the second afternoon for his "experience session." He was asked to bring his own alcoholic beverage. This session was held in groups of 2 to 5 patients. Each patient was allowed to drink at his usual rate. The reaction of alcohol with antabuse occurred within two to fifteen minutes, or after 2 to 6 ounces (0.06 to 0.18 liter) of liquor, or before a quart (1 liter) of beer could be consumed. Of the total of 55 patients, 45 have not reverted to their old drinking habits. The 10 "failures" include 6 persons who were not adequately followed after starting to take antabuse. To insure adequate evaluation of antabuse therapy, a social approach to include relatives, friends and Alcoholics Anonymous is necessary. A few skin rashes have been observed. One serious complication with convulsions followed by unconsciousness, hemiparesis and amnesia occurred in a diabetic patient, suggesting that antabuse may be contraindicated in persons with diabetes. The patient's first trial with alcohol, after taking antabuse, should be under controlled conditions. A minimum period of forty-eight hours of sobriety is recommended before starting on therapy with antabuse. Each patient should be checked at least once every two weeks after his controlled experience of the effects of antabuse plus alcohol. Antabuse appears to be a valuable drug in the total treatment of alcoholism. Psychotherapeutic measures remain still a necessary part of the successful treatment of alcoholism.

Death Following Antabuse-Alcohol.—Jones reports the death of a healthy man aged 29 following a reaction which resulted from his having taken 1 ounce (0.03 liter) of rum after desensitization with antabuse. The patient had received 5.5 Gm. of antabuse up until the time of taking alcohol. On the third day that he was receiving antabuse his dacryocystitis was treated surgically after induction of local anesthesia. He received one extra day's dosage of antabuse before alcohol was given to him, so that his prealcoholic dosage was 1 Gm. greater than the 4.5 Gm. customarily given. The reaction observed over the two hours following the ingestion of alcohol was moderately severe. Apparently this reaction had begun to wane, and the patient appeared to be in the sleepy stage, when, two and a half hours after the ingestion of alcohol, respiration ceased. Necropsy revealed acute congestive right-sided cardiac failure as the cause of death but gave little indication as to why this cardiac failure should have occurred. Chemical analysis of the blood revealed an extremely high level of acetic aldehyde, which may have been responsible for the cardiac failure. Treatment of alcoholism with antabuse is far from being free from danger. It should be carried out only in the hospital with exceedingly small doses of both the drug and alcohol and with all the facilities at hand for emergency resuscitation. The patient must be carefully observed for a number of hours after the acute reaction. It would seem to be unsafe to administer this drug on an outpatient basis.

Cincinnati Journal of Medicine

30:243-298 (May) 1949

Surgical Problem of Recurrent and Uncontrolled Cancer of Female Genitalia After Previous Irradiation and Conservative Surgery. A. Brunschwig.—p. 243.
Failure of Beef Spleen Extracts to Influence Course of Carcinoma. J. L. DeCourcy.—p. 246.
Hormonal Control of Menstrual Cycle—Application of Physiologic Concepts to Therapy. V. M. Esselborn.—p. 248.

30:299-355 (June) 1949. **Partial Index**

Alveolectomy. K. Tschiassny.—p. 299.
Early Treatment of Stroke. C. D. Aring.—p. 304.

Geriatrics, Minneapolis

4:127-204 (May-June) 1949. **Partial Index**

Orientation of Geriatrics. E. J. Stieglitz.—p. 127.
Hyperthyroidism in the Aged: Review of 100 Cases Over 60 Years of Age. L. Seed and A. M. Lindsay.—p. 136.
Health Outlook for Older People. G. Mark.—p. 146.
Study of Electrocardiogram in Persons Over Seventy. R. J. McNamara.—p. 150.
Problems in Gastrointestinal Surgery as Affected by Advanced Age. J. T. Reynolds.—p. 161.
Psychometric Evaluation of Aged White Males. E. J. Chesrow, P. H. Wosika and A. H. Reinitz.—p. 169.

Indiana State Medical Assn. Journal, Indianapolis

42:495-582 (June) 1949

Intussusception in Adults: Report of 4 Cases. W. C. Moore, H. C. Marsh and C. E. Rush.—p. 507.
Obstetrical Hemorrhage. D. N. Danforth.—p. 512.
*Tetraethyl Ammonium Chloride and Its Use in Peripheral Vascular Diseases. J. L. Eisaman and J. Chrispin.—p. 517.
Complications in Treatment of Incarcerated Hernia with Vasodilatant Drug: Case Report. T. L. Grisell.—p. 522.
Management of Omphalocele, or Exomphalos: Report of Case. T. D. Carpenter and B. K. Zaring.—p. 525.

Tetraethylammonium Chloride in Vascular Diseases.—Eisaman and Chrispin review the pharmacology of tetraethylammonium chloride and describe its effects on over 100 patients with peripheral vascular disease. Seven illustrative case histories are presented. The ability of tetraethylammonium chloride to relieve symptomatically the effects of circulatory insufficiency is remarkable. Rest pain from thromboangiitis obliterans (Buerger's disease), claudication pain from thromboangiitis or arteriosclerosis obliterans and causalgic pain, including the pain and swelling of reflex sympathetic dystrophies and osteoporosis due to trauma, may be relieved. It is helpful in cases in which the use of tobacco is stopped on account of thromboangiitis obliterans. The drug is a useful substitute for lumbar paravertebral sympathetic block in cases of mild thrombophlebitis. The drug has been used in several cases of hypertension with great reduction in systolic and diastolic pressures. This compound may be of some value in determining the suitability for sympathectomy of patients with hypertension. In a few cases the drug did not lower the blood pressure (evidently because of humoral effects). However, even in those hypertensive patients in whom blood pressure is not lowered, relief of headaches and associated symptoms is usually obtained. In 1 patient in whom two ophthalmologists had assumed that eyesight was lost, vision was restored by daily injections of tetraethylammonium chloride. The authors stress that the patient must remain recumbent for at least thirty minutes after intravenous injection of the drug.

Journal of Experimental Medicine, New York

89:561-720 (June) 1949. **Partial Index**

Virus Recovered from Feces of "Poliomyelitis" Patients Pathogenic for Suckling Mice. G. Dalldorf, Grace M. Sickles, Hildegard Plager and Rebecca Gifford.—p. 567.
Quantitative Air-Borne Tuberculosis in Rabbit: Course of Human Type Infection. A. G. Heppleston.—p. 597.
Effect of Alloxan Diabetes on Experimental Cholesterol Atherosclerosis in Rabbit: I. Inhibition of Experimental Cholesterol Atherosclerosis in Alloxan Diabetes: II. Effect of Alloxan Diabetes on Retrogression of Experimental Cholesterol Atherosclerosis. G. L. Duff and G. C. McMillan.—p. 611.
Effect of Proteinuria on Kidney: Proteinuria, Renal Enlargement, and Renal Injury Consequent on Protracted Parenteral Administration of Protein Solution in Rats. J. H. Baxter and G. C. Cotzias.—p. 643.
Serologic Studies in Rheumatic Fever: I. "Phase" Reaction and Detection of Autoantibodies in the Rheumatic State. E. E. Fischel and Ruth H. Pauli.—p. 669.
Cytology of Rickettsiae. H. Ris and J. P. Fox.—p. 681.
Induction of Cardiac Lesions, Closely Resembling Those of Rheumatic Fever, in Rabbits Following Repeated Skin Infections with Group A Streptococci. G. E. Murphy and H. F. Swift.—p. 687.
Structure of Elastic Tissue as Studied with Electron Microscope. J. Gross. —p. 699.

Journal of Lab. and Clinical Medicine, St. Louis

34:733-882 (June) 1949

Cultivation of Mycobacterium Tuberculosis: Comparison of Hydrochloric Acid and Trisodium Phosphate in Preparation of Sputum and of Use of Fluid Dubos-Davis Medium and Petragnani Medium. M. Beattie. —p. 733.
Bacteriophage Typing of Salmonella Typhi: Report of Typing in Michigan, 1947-1948. N. D. Henderson and W. W. Ferguson.—p. 739.
Formation of Antibodies in Human Subjects After Ingestion of Heat-Killed Brucella Abortus. A. I. Braude, D. Gold and D. Anderson. —p. 744.
*Laboratory and Clinical Observations on Aerosporin (Polymyxin B). E. Jawetz and V. R. Coleman.—p. 751.
Coagulation Defect in Thrombocytopenic Purpura. A. J. Quick, J. N. Shanberge and M. Stefanini.—p. 761.
Developing (Coombs) Test in Spherocytic Hemolytic Anemias: Its Significance for Pathophysiology of Spherocytosis and Splenic Hemolysis. K. Singer and A. G. Motulsky.—p. 768.
Hypertension During Blood Transfusions for Hemorrhagic Shock in Patient with Unilateral Renal Ischemia. E. L. DeGowin.—p. 784.
Effect of Heparin and Dicumarol in Increasing Coronary Flow Volume. N. C. Gilbert and L. A. Nalefski.—p. 797.
One-Stage and Two-Stage Prothrombin Methods in Control of Dicumarol Therapy, with Remarks on Ac-Globulin. J. H. Olwin.—p. 806.
Causes for Rejections of Blood Donors: Statistical Study. C. M. Zukerman—p. 814.
Distribution of Emetine in Tissues. L. G. Parmer and C. W. Cottrill. —p. 818.
Spectrophotometric Method for Determination of Procaine and p-Aminobenzoic Acid. K. S. Ting, J. M. Coon and A. C. Conway.—p. 822.
Kepler Water Test in Tabes Dorsalis. F. Diez-Rivas.—p. 830.
Effect of Hyaluronidase on Hematocrit and Plasma Proteins of Albino Rat. S. K. Elster, M. E. Freeman and P. R. Anderson.—p. 834.
Minimum Tryptophane Requirement and Urinary Excretion of Tryptophane by Normal Adults. C. W. Denko and W. E. Grundy.—p. 839.
Alcohol and Pancreatitis: Serum Amylase Determinations in Normal Individuals Following Ingestion of Alcohol. J. Myhre and S. Nesbitt. —p. 844.
Studies on Depression of Brain Oxidations: I. Biopsy Technic and Analysis of Variance in Selection of a Pentobarbital Concentration. D. S. Wilkins, R. M. Featherstone, C. E. Gray and others.—p. 846.
Studies on Serum Esterase: Serum Esterase in Liver Disease. M. G. Goldner and M. Morse.—p. 858.

Observations on Aerosporin (Polymyxin B).—Jawetz and Coleman say that aerosporin (polymyxin B) is a stable peptide derived from Bacillus polymyxa with antibacterial action against many gram-negative organisms. Among bacteria commonly isolated from infections of the urinary tract, Escherichia coli and Aerobacter aerogens were inhibited in vitro by less than 1 microgram of the drug per cubic centimeter, but many strains of Proteus and Pseudomonas were more resistant. Resistance could be induced in susceptible bacterial strains only with difficulty. The action of the antibiotic in vitro appeared to be bactericidal rather than bacteriostatic. Multiple intramuscular injections of the drug resulted in cumulative serum levels. The serum levels were greatly increased in the presence of elevated nonprotein nitrogen of the blood. In patients with chronic infection of the urinary tract, administration of polymyxin B for three to four days eliminated susceptible bacteria from the urine and controlled symptoms. However, the short course of treatment was followed by a bacteriologic relapse within one to three weeks in all cases. Prolonged treatment with the drug was not feasible because of toxic symptoms affecting particularly the nervous system. In its present form polymyxin B is not suitable for general clinical application.

Journal of Pediatrics, St. Louis

34:663-812 (June) 1949

Fibrosis of Pancreas in Infants and Children: Illustrated Review of Certain Clinical Features with Special Emphasis on Pulmonary and Cardiac Aspects. C. D. May and C. U. Lowe.—p. 663.
Injuries in Childhood. C. R. Hanlon, J. B. Butchart and P. R. Kempf. —p. 688.
Serotherapy in Pertussis. E. H. Place, M. J. Keller and E. W. Shaw. —p. 699.
Epidemic Diarrhea of Newborn Infant. J. G. Cumming.—p. 711.
Botulism and Tick Paralysis: Differential Diagnosis of Acute Bulbar Poliomyelitis. D. B. Rice.—p. 716.
Roentgen Manifestations of Infantile Hypertrophic Pyloric Stenosis. H. M. Olnick and H. S. Weens.—p. 720.
Precocious Puberty. L. W. Mason.—p. 730.
Method of Determination of Serum pH Applicable for Clinical Use. W. M. Kelsey and L. B. Leinbach.—p. 741.
*Effect of Terminal Disinfection and Other Factors on Stability of Ascorbic Acid in Reliquefied Milk Products Used in Infant Feeding. D. G. Keeney, L. S. Baur and O. F. Garrett.—p. 745.

Stability of Ascorbic Acid in Reliquefied Milk.—The dried milk product studied by Keeney and associates was one of the products designed especially for infant feeding. The composition of this product is 13.75 per cent protein, 26.85 per cent fat, 52.90 per cent lactose, 4.50 per cent ash and 2.0 per cent moisture. All samples used in this study were fortified with synthetic crystalline ascorbic acid, the vitamin being added to the liquid product prior to the drying process. The batches of powder had been made in regular commercial operation by the spray-drying process. Consequently, the results should be fairly representative of those with the commercial product. In the reliquefying process ¼ pound (0.11 Kg.) of powder was made up to 1 quart (0.95 liter) of liquid with warm water. The authors found that loss of ascorbic acid in the dry powder contained in the open can is negligible during the first four days. Reliquefied formulas made from dried milk products containing approximately 75 mg. of total ascorbic acid per quart, and prepared in the conventional manner without heating, lose approximately 11 per cent (about 8 mg.) of their total ascorbic acid content during twenty-four hours of storage under ordinary home refrigeration. Terminally disinfected formulas (originally containing about 75 mg. total ascorbic acid per quart) which have been rapidly cooled before being put under refrigeration lose approximately 15 to 20 per cent (about 11 to 15 mg.) of their total ascorbic acid content during the combined heating and storage period of twenty-four hours. Terminally disinfected formulas allowed to cool slowly lose slightly more of their total ascorbic acid content than if cooled rapidly. Terminal disinfection of the formula by the fast heating high temperature procedure is to be preferred with respect to the stability of ascorbic acid. Warming the refrigerated formula quickly to body temperature just prior to feeding does not increase the loss of ascorbic acid. Exposure of the reliquefied product to light for extended periods of time accelerates the loss of ascorbic acid and is to be avoided. Iron and chlorine in the amounts normally present in treated city waters have no significant effect on the stability of the ascorbic acid in the formulas. Boiling the water subsequently to be used in making up the formulas in copper vessels is not desirable, because copper accelerates the loss of ascorbic acid.

Laryngoscope, St. Louis

59:441-564 (May) 1949. **Partial Index**

*Poliomyelitis-Tonsillectomy Survey—1948. D. S. Cunning.—p. 441.
Ventilation Paracentesis for Relief of Stubborn Eustachian Tube Blockage. J. G. McLaurin.—p. 482.
Subcutaneous Rupture of Trachea from Larynx by External Trauma; with Stenosis and Recovery. B. R. Dysart.—p. 502.
Scleroma of Larynx, Trachea and Bronchi. A. H. Miller.—p. 506.
Fenestration Operation: Indications, Technic and Results. J. B. Farrior. —p. 515.
Bacterial Allergy and Importance of Otolaryngological Procedures. O. C. Hansen-Pruss.—p. 540.

Poliomyelitis and Tonsillectomy Survey, 1948.—Cunning has been compiling statistics since 1946 to determine whether a causal relationship exists between tonsillectomies and poliomyelitis. The surveys conducted in 1946 and 1947 did not justify the conclusion that a causal relationship existed. Of 2,290 poliomyelitis cases tabulated in 1946, there were histories of recent tonsillectomies in 56, or 2.5 per cent. In the following year (1947) 4,331 cases were reported, 24, or 0.55 per

cent, with previous tonsillectomies. During the 1948 epidemic of poliomyelitis the United States Public Health Service reported 27,894 cases. Statistics could be compiled on 10,624 of these. There were 1,481 cases of the bulbar type of poliomyelitis, 27 of them (1.7 per cent) preceded by tonsillectomies. Of the 5,859 cases listed as the spinal type, there were histories of tonsillectomies in 8 (0.13 per cent). In the 3,284 cases recorded as mild, there were 4 (0.12 per cent) with recent tonsillectomies. All tonsillectomies had been performed one to thirty days prior to the onset of poliomyelitis. The author is of the opinion that no definite causal relationship has been established between tonsillectomy and poliomyelitis. He does not believe that tonsillectomy should be postponed indefinitely simply because the summer months are the months during which poliomyelitis is prevalent. However, if there is a rise in the poliomyelitis rate, bordering on epidemic proportions, all elective surgical operations should be postponed.

Medicine, Baltimore

28:143-238 (May) 1949

*Etiology of Rheumatic Fever: Review of Theories and Evidence. B. H. Waksman.—p. 143.
*Pulmonary Insufficiency: III. Study of 122 Cases of Chronic Pulmonary Emphysema. E. deF. Baldwin, A. Cournand and D. W. Richards Jr. —p. 201.

Etiologic Basis of Rheumatic Fever.—Since most reviews on rheumatic fever deal with work carried on in circumscribed areas or over limited periods, Waksman believes that there is a need for a review tracing the main currents of thought concerning the etiologic basis of this disease. The present review is an attempt to fill this need. Susceptibility to rheumatic fever is a hereditary factor, though the same pathologic process seems to take place to a limited extent in many normal persons. The frequency with which susceptible persons contract rheumatic fever, the so-called penetrance, is influenced both by internal factors such as sex, age, pregnancy, diabetes and thyroid disease, and perhaps others as yet undetermined, and by external factors such as climate and diet. Pathologic similarities and overlapping hereditary factors and incidence suggest similar defects in rheumatic fever, rheumatoid arthritis, periarteritis nodosa and glomerulonephritis. This suggestion is confirmed by the simultaneous production in one animal of what appear to be two or even three of these diseases by one experimental technic. Rheumatic patients show a decided nonspecific hyperirritability to most stimuli. Attacks of rheumatic fever are usually precipitated by streptococcic infections of the throat, though trauma, cold and fatigue may also initiate attacks. The process set in motion by these various events is not known; it may be the adaptation syndrome of Selye, a nonspecific allergic response, an increasing titer of autoantibodies against some constituent of connective tissue or even the reactivation of a latent virus infection. The second and third of these alternatives are strongly supported by observations. The clinical pattern of rheumatic fever may depend on such factors as trauma, environment, previous rheumatic history and conceivably nervous reflex patterns.

Pulmonary Insufficiency.—In this paper, the third of a series dealing with pulmonary insufficiency, Baldwin and associates discuss various types of pulmonary dysfunction observed in chronic pulmonary emphysema. They propose a physiologic classification of chronic pulmonary emphysema in which cases with pulmonary insufficiency and those with cardiopulmonary insufficiency are considered separately. The severity of pulmonary insufficiency was judged from the reduction of the arterial oxygen saturation and from the increase in carbon dioxide tension following a standard exercise test. They differentiate 4 groups. In group 1 severe impairment of the ventilatory function and moderate disturbance of intrapulmonary air distribution are present. Hyperventilation, however, adequately compensates for the disturbance of distribution, thus maintaining an adequate alveolar ventilation with normal respiratory exchange and preventing the development of arterial anoxia. The major disability of this group, therefore, is the reduction in breathing reserve, which limits physical activity and causes dyspnea. In group 2 impairment of the ventilatory function and greater disturbance of air distribution appear. Although hyperventilation still maintains a relatively normal arterial carbon dioxide tension, the compensation is not sufficient to prevent arterial anoxia at rest and following exercise. To the reduction in breathing reserve another major disability is thus added, namely, alveolar respiratory insufficiency. In group 3 the reduction of ventilatory function and the disturbance in air distribution are both severe. Compensatory hyperventilation during exercise and early recovery is not possible, because of the limitation of the ventilatory capacity. This adds to the inadequacy of the alveolar ventilation as a cause of the arterial carbon dioxide retention and arterial anoxia. This group suffers from profound ventilatory and alveolar respiratory insufficiency. In group 4 a ventilatory and an alveolar respiratory insufficiency nearly as severe as that in group 3 is associated with evidence of polycythemia and chronic congestive heart failure. Hypoventilation during all the periods of observation in the presence of a high arterial carbon dioxide tension and acidosis and a low oxygen saturation are striking features of this group. They reveal a profound disturbance in the response of the respiratory centers to normal stimuli. Cases, some of them with autopsy observations, have been described in order to illustrate further the characteristic patterns of pulmonary dysfunction.

Michigan State Medical Society Journal, Lansing

48:521-648 (May) 1949

Diphtheria in the City of Detroit. J. G. Molner, B. H. Douglas and H. A. Raskin.—p. 561.
Why "Insanity" Hearings Are Voided by the Court: Suggestions Regarding Physicians' Certificates of Insanity. R. A. Morter.—p. 574.
Ovarian Pregnancy. M. G. Fee and J. W. Thompson.—p. 577.
The Anxiety State from the Layman's Viewpoint. R. C. Moehlig. —p. 579.
Bronchiectasis: Report of 100 Cases. N. Levitt.—p. 585.
Postoperative Ileostomy Management: Simplified Technic. E. T. Thieme and W. D. Cheney.—p. 590.
Electrocardiographic Changes in Patients Receiving Tetracthylammonium Chloride Intravenously. R. W. Monto and J. W. Keyes.—p. 593.
Histoplasmosis. P. A. Van Pernis.—p. 597.
Nodular Diseases of Extremities. A. R. Woodburne and O. S. Philpott.—p. 600.

Military Surgeon, Washington, D. C.

104:415-498 (June) 1949. **Partial Index**

Airborne Medical Service. R. C. Hunter Jr.—p. 427.
Frozen Foods in the Tropics. S. C. Smock.—p. 431.
Biochemical Research at the Army Medical Department Research and Graduate School. M. E. Freeman.—p. 434.
Hospital Administration Courses in the United States Army. J. T. Richards.—p. 437.
Educational Program of the Army Nurse Corps. Augusta Short.—p. 442.
Rapid Test for Serum Protein Alterations. E. E. Mandel.—p. 456.
Uses and Abuses of Streptomycin in Thoracic Surgery. L. M. Shefts. —p. 461.
Experience with Spinal Anesthesia in Obstetrics. G. A. Bourgeois and N. Herzig.—p. 464.
Ringworm Therapy: Fungicidal Skin Varnish. S. Vernon.—p. 470.

New England Journal of Medicine, Boston

240:825-862 (May 26) 1949

The Shattuck Lecture: La Médecine du Coeur. P. D. White.—p. 825.
*Treatment and Prophylaxis of Pulmonary Embolism by Vein Interruption. M. L. Connerley and J. H. L. Heintzelman.—p. 830.
Splenic-Vein Thrombosis Following Transthoracic Gastrectomy and Incidental Splenectomy. S. Quan and B. Castleman.—p. 835.
Obstetrics in Winchester Hospital (1928-1947). S. H. Moses.—p. 838.
Abdominal Surgery. A. W. Allen and C. E. Welch.—p. 841.
Oat-Cell Carcinoma of Left Main Bronchus, with Metastases to Brain, Liver, Adrenal Gland and Lymph Nodes.—p. 849.
Adenocarcinoma of Left-Upper-Lobe Bronchus.—p. 851.

Interruption of Veins for Pulmonary Embolism.—Connerley and Heintzelman performed surgical interruptions of veins in 67 patients with thrombophlebitis or phlebothrombosis during the period 1945 to 1948. Of these, 51 were bilateral femoral vein divisions, 6 were a combination of right-common-iliac and left-common-femoral divisions and 10 were divisions of the inferior vena cava. Both thrombophlebitis and phlebothrombosis may give rise to pulmonary embolism. Division of veins was performed immediately on the discovery of the presence of one or more of the symptoms and signs of thrombophlebitis which usually appear prior to pulmonary embolism. Some amount of swelling of the lower extremity occurred postoperatively in all patients. The edema was transitory, never of over four weeks' duration except in 2 patients, both of whom had

superficial interruption of the femoral vein. Complete remission of all swelling resulted from bilateral lumbar sympathetic neurectomy in the 2 patients. Recurrent thrombophlebitis appeared postoperatively in all patients, but these cycles were usually limited to two or three episodes of three to five days each. They can be reduced to a minimum by graded exercises without postphlebitic syndromes in most patients. There were 2 postoperative deaths which must be accredited to interruption of the vein. They do not disprove the efficacy of this form of treatment and prophylaxis of pulmonary embolism. Surgical interruption of selected veins can be accomplished with an insignificant mortality without the danger of massive delayed hemorrhage and the numerous critical laboratory observations required when anticoagulants are administered.

New York State Journal of Medicine, New York

49:1233-1360 (June 1) 1949

Alzheimer's Disease with Case Report. H. R. Brodman and J. H. Friedlander.—p. 1275.
Neurology—Undergraduate Teaching and Clinical Practice. W. D. Ayer. —p. 1281.
Scopolamine in Vertigo. L. Wirth.—p. 1285.
Placenta Previa: Twelve-Year Study. M. J. Goodfriend, M. Daniel and A. Charlton.—p. 1286.
Radiologic Study of Mastoid Bone in Infants in Conjunction with Anatomic and Pathologic Investigations. H. G. Koiransky, I. K. Ettman and E. L. White.—p. 1291.
Combined Resection of Lung and Parietal Pleura in Treatment of Pulmonary Suppuration and Empyema. M. S. Lloyd and E. A. Naclerio. —p. 1293.
Complications of Peritoneal Button Operation for Ascites. M. Goldfischer, A. Kantrowitz, S. Kornblum and A. H. Glick.—p. 1297.
Habitus in Tuberculosis. J. W. Goldzieher, S. Bassin and S. T. Goldzieher.—p. 1300.
Relative Value of Standard and Unipolar Leads in Diagnosis of Myocardial Damage. S. H. Rinzler.—p. 1303.
Protamine Edema in Diabetes Mellitus: Preliminary Report. M. Ant. —p. 1306.
Psychosomatic Status—Gastroduodenal Ulcer and Vagotomy. A. O. Wilensky.—p. 1308.
Acute Generalized Peritonitis Due to Spontaneous Rupture of Pyosalpinx. G. H. Romberg.—p. 1311.
The "Medical" Treatment of Pilonidal Disease. H. Berger.—p. 1313.
Papaverine in Epilepsy. H. I. Russek and B. L. Zohman.—p. 1315.
Addition of Niacin to Procaine Hydrochloride for Intravenous Administration: Preliminary Report. D. J. Graubard, E. Neuwirth and J. Kovacs.—p. 1317.
Cardiac Neurosis. R. Seidenberg.—p. 1319.
Gastrostomy Technic Adapted to the Contracted Stomach. S. Leo. —p. 1321.

Ohio State Medical Journal, Columbus

45:537-664 (June) 1949

Cases Illustrating Some Causes for Failure in Management of Patients with Allergy. M. B. Cohen and L. E. Abram.—p. 561.
Use of Histamine in Bell's Palsy. D. A. Skinner.—p. 565.
*Acute Dermatitis and Pneumonitis in Beryllium Workers: Review of 406 Cases in Eight-Year Period with Follow-Up on Recoveries. J. M. DeNardi, H. S. Van Ordstrand and M. B. Carnody.—p. 567.
Trichinosis—Preventable Disease. D. F. Leach and H. B. Ashworth. —p. 576.
Ionizing Radiations. R. H. Wilson.—p. 579.
Hypoplastic Anemia in Patient Treated Unfavorably with Tridione: Case Report. J. C. Smith, R. W. Heinle and O. P. Kimball.—p. 582.
Progress of Anesthesiology in Ohio. K. C. McCarthy.—p. 585.

Acute Dermatitis and Pneumonitis in Beryllium Workers.—DeNardi and associates call attention to acute dermal and respiratory manifestations occurring among workers in plants producing beryllium and its compounds. From 1940 through July 1, 1948, 406 cases have been encountered in three plants extracting beryllium from the ore beryl in the Cleveland area. Dermatologic manifestations occurred in 195 cases, and 211 patients had major respiratory manifestations. The cutaneous manifestations may appear as contact or hypersensitivity-like dermatitis, as urticarial or hyperemic lesions, discrete papular lesions, papulovesicular lesions or beryllium ulcers, which are small abrasions of the skin in which minute crystals of beryllium fluoride or beryllium sulfate tetrahydrate become embedded. Treatment includes incision of the papule, removal of the crystals in the acute ulcers and curettage of the fibrous base. Healing by second intention is complete within seven to fourteen days. Of the 211 patients with major respiratory difficulties, 121 had tracheobronchitis and 90 had chemical pneumonitis. Chemical nasopharyngitis usually preceded tracheobronchitis and pneumonitis, but frequently it also occurred independently. It was not usually disabling. There were two main types of pneumonitis. The fulminating type is the least common, and usually is associated with exposure to fumes of anhydrous beryllium sulfate formed during violent chemothermal reaction in the treatment of pulverized beryl ore fritted with sulfuric acid. Symptoms may appear within a few hours and comprise spasmodic cough, tightness of the chest with substernal pain, severe exertional dyspnea and in the severe cases varying degrees of cyanosis. The insidious type of pneumonitis usually follows prolonged exposure to the fumes or dusts of beryllium sulfate tetrahydrate, beryllium fluoride and beryllium oxide and probably results from cumulative irritation of the bronchioles by small amounts of the compounds. Subjective symptoms are: dyspnea on mild exertion, spasmodic cough aggravated in the supine position and substernal burning pressure or pain with tightness of the chest, general weakness and anorexia with weight loss. Hospitalization and the intermittent use of oxygen are required in treatment of both types of pneumonitis. There were 10 deaths in the 90 cases of pneumonitis. Recent reexamination of 20 patients who had the severe type of pneumonitis revealed no recurrent or chronic manifestation of the disease and no resultant disability.

Pennsylvania Medical Journal, Harrisburg

52:793-904 (May) 1949

Experiences and Results in Total Perineal Prostatectomy for Carcinoma of Prostate. G. G. Smith.—p. 817.
Surgical Treatment of Hyperthyroidism. H. L. Foss.—p. 822.
Future of Cesarean Section. C. Bachman.—p. 825.
Geriatrics. R. R. Snowden.—p. 828.
Experimental Background of Recent Attempts at Chemotherapy of Cancer. S. P. Reimann and E. T. Nishimura.—p. 832.
Eruptions of the Hands. F. M. Jacob and W. Guy Jr.—p. 837.
Sulfonamides in Pediatrics. R. R. Macdonald.—p. 842.
Treatment of Dendritic Keratitis. J. H. Delaney.—p. 845.

Psychiatric Quarterly, Utica, N. Y.

23:1-202 (Jan.) 1949. **Partial Index**

Lying: Inquiry into Ethics of Neurotic and Psychopathic Behavior. B. Karpman.—p. 1.
*Review of 27 Prefrontal Lobotomy Patients. H. B. Snow.—p. 26.
Structure and Dynamics of Supervision in Psychiatric Training. E. Stainbrook.—p. 35.
Difference in Degree of Suggestibility Between Schizophrenic, Psychoneurotic and Normal Subjects in Reproduction of Visual Forms. L. Arcieri.—p. 41.
Trauma of Bearing. N. Fodor.—p. 59.
Schizophrenia: Diencephalic Syndrome. S. Major.—p. 83.
Use of Curare (Intocostrin) in Electric Shock Therapy. R. J. Young. —p. 92.
Psychopathological Classification of Schizophrenia. D. P. Ausubel.—p. 127.
Electric and Metrazol Shock Treatment Despite Physical Contraindications. H. J. Kleinschmidt, J. S. A. Miller, M. H. Orens and L. Cohen. —p. 145.

Prefrontal Lobotomy.—Snow reviews the clinical results obtained in 27 patients who were subjected to prefrontal lobotomy. Sixteen patients derived benefit from the surgical operation. Eight of these 16 could go home, and the other 8 could work about the ward. Eleven patients were not benefited. The author does not advocate the operation as a routine measure for acute psychosis. All other forms of therapy, plus a reasonable length of time, should be given before this heroic type of treatment is attempted. It is of value in the chronic cases of long standing—for the forgotten persons in psychiatric therapy. With the use of prefrontal lobotomy one can look forward to saving a moderate percentage from the camisole, restraint sheet or seclusion room. Many of these persons can again enjoy social relationships even though they retain some of their psychotic manifestations.

South Carolina Medical Assn. Journal, Florence

45:147-172 (May) 1949

The Purpuric State. R. Wilson Jr.—p. 147.
Hyperparathyroidism: Report of Case. W. C. Herbert Jr., W. R. McLawhorn Jr. and P. J. Moore Jr.—p. 151.
Modern Psychiatry in General Practice. L. M. Dub.—p. 152.
General Practitioner in Rural Practice. A. W. Browning.—p. 155.

45:173-202 (June) 1949

Training of the Young Doctor. R. B. Durham.—p. 173.
Multiple Myeloma. H. Smith Jr.—p. 175.
Voluntary Cooperative Effort. A. L. M. Wiggins.—p. 178.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted. Single case reports and trials of new drugs are usually omitted.

British Heart Journal, London

11:205-304 (July) 1949

Hypertensive and Ischaemic Heart Disease: Comparative Clinical and Pathologic Study. C. V. Harrison and P. Wood.—p. 205.
Sino-Auricular Block, Interference Dissociation, and Different Recovery Rates of Excitation in Bundle Branches. H. B. Burchell.—p. 230.
Electrocardiographic Studies in Cretins. B. Schlesinger and B. Landtman. —p. 237.
Effects of Thiocyanate on Basal and Supplemental Blood Pressures. K. S. Alstad.—p. 249.
Radiokymography in Patent Ductus Arteriosus. K. S. Smith and F. G. Wood.—p. 257.
*Mass Miniature Radiography in Detection of Heart Disease. A. Maclean and A. Rogen.—p. 264.
Electrocardiogram of Posterior Cardiac Infarction. P. Meyer.—p. 271.
Transposition of Aorta and Pulmonary Artery Demonstrated by Angiocardiography. J. F. Goodwin, R. Steiner and E. J. Wayne.—p. 279.
Results of Medical and Surgical Treatment of Essential Hypertension. M. A. Keith, B. Woolf and A. R. Gilchrist.—p. 287.

Mass Miniature Radiography and Heart Disease.—Maclean and Rogen say that the primary intention of the Mass Radiography Unit of Glasgow was the early detection of tuberculous lung disease, although it was realized that nontuberculous conditions and notably heart disease would come within its sphere. The experienced eye could detect enlargement of the cardiac shadow in the miniature film. Varying shades of increased density of the cardiovascular shadow could also be noted. Accordingly, it became the rule to offer clinical examination to any person found to have an abnormality of the cardiac shadow. Prominence of the pulmonary artery shadow frequently did not indicate clinical heart disease. Questions were asked to bring out a history of a previous rheumatic infection or of other illness significant in the causation of heart disease. On the basis of the experience during the first year of mass radiography it was decided that the following groups should be recalled for clinical examination: (1) patients with a history of rheumatic fever, chorea or other illness suggestive of acute rheumatism; (2) those with a history of heart disease, and (3) those with abnormality of the cardiovascular shadow in the miniature roentgenogram. A history of one attack of rheumatic fever was associated with organic heart disease in only 1 in 5 cases; two or more attacks resulted in clinical evidence of disease in less than half the patients giving such a history. This is a low incidence, but it must be realized that no strict check could be made on the accuracy of the history of rheumatic fever; many comparatively minor febrile illnesses masquerade under this heading. One attack of chorea resulted in organic heart disease slightly more often than did one attack of rheumatic fever. Patients with a history of previous rheumatic infection and found to have heart disease usually had known it. Radiologic cardiac enlargement was associated with organic heart disease in 93 of 516 patients in whom this roentgenologic observation was reported. No evidence of disease was found in 340 of 529 patients who believed that they had heart disease (64 per cent). Organic valvular disease was diagnosed for the first time in only 21 cases in 34,918 routine roentgen examinations of the chest.

British Journal of Urology, London

21:101-188 (June) 1949

*Total Cystectomy: Consideration of Technic. T. Millin and F. Masina. —p. 108.
Parenchymal Carcinoma of Kidney. I. H. Griffiths and A. C. Thackray. —p. 128.
Unusual Examples of Urethrocele and Ureterocele: Operative Cure. A. W. Adams.—p. 152.
Case of Ureterocele Complicated by Renal and Ureteric Calculi. A. N. McCrea.—p. 157.
Ureterovesical Calculus. J. K. Monro.—p. 161.

Total Cystectomy.—Millin and Masina feel that the exact place of radical surgery in the treatment of malignant disease of the bladder has not been determined as yet, but with modern technic and ancillary aids the operation of extirpation of the bladder and its immediate lymphatic nodes carries no prohibitive mortality. The authors present an operative technic of total cystectomy based on sound anatomicopathologic principles. The method has been evolved after a combined experience with a variety of methods in more than 100 cases. The technic described is that of descending abdominal cystectomy. The authors do not claim that any technical finality has been achieved but suggest that the method represents an advance on any previously described.

British Medical Journal, London

1:1063-1104 (June 18) 1949

Spleen and Splenectomy. R. B. Scott.—p. 1063.
Operation for Treatment of Stress Incontinence. W. Shaw.—p. 1070.
Steatorrhea and Glossitis After Ileocolostomy: Effect of Synthetic Vitamins of B Complex, Autolysed Yeast, and Liver Extract. A. Brown. —p. 1073.
Prognosis of Certain Hysterical Symptoms. A. B. Carter.—p. 1076.
Nutritional Macrocytic Anemia in Temperate Zones. J. Rubie and C. D. Calnan.—p. 1079.
Streptomycin in Finger Infections. J. B. Watson, E. R. Griffiths and L. W. Plewes.—p. 1081.

1:1105-1150 (June 25) 1949

Mind of Mechanical Man. G. Jefferson.—p. 1105.
Use in Children of Procaine Penicillin with Aluminium Monostearate. J. L. Emery, L. M. Rose, S. M. Stewart and E. J. Wayne.—p. 1110.
Injuries to Superior Longitudinal Sinus. G. B. Barker.—p. 1113.
*Case of Bilateral Pheochromocytoma. T. M. Reid and R. Salm.—p. 1116.
Spontaneous Circumrenal Hematoma: Review and Report of 2 Cases. K. W. Martin.—p. 1118.
Aplastic Anemia Following Neoarsphenamine. F. D. Hart and J. G. Humble.—p. 1120.
Histamine Headache. M. Eszenyi-Halasy.—p. 1121.

Bilateral Pheochromocytoma.—The patient, a woman aged 40, had complained of generalized throbbing headaches for ten years. These had increased in severity during the previous two years. On the basis of the history and the results of roentgen examinations a presumptive diagnosis of chromaffinoma of the right adrenal gland was made. The right lumbar region was explored surgically, and a large adrenal tumor was removed. Both pupils became maximally dilated as soon as the tumor was handled. Postoperatively the patient was treated for shock, but in spite of this, death occurred within twenty-four hours. At necropsy the left adrenal gland appeared to be also grossly enlarged. Pheochromocytoma, or chromaffinoma, is a rare tumor. To 1946 about 176 lesions had been recorded, of which only 47 showed endocrine activity. Among these there were 16 bilateral growths, so that the present case is probably the seventeenth. Apart from the history and abdominal palpation, roentgen examination is of help in diagnosis. Recently two new tests have been devised which may prove most helpful in diagnosing the condition. Goldenberg and others (1947) postulated that in a case in which hypertension is due to an increased amount of epinephrine it will be abolished or decreased by the intravenous administration of adrenolytic compounds. The second test, which was developed by Roth and Kvale in 1945, consists of intravenous injection of histamine in saline solution. In patients with a chromaffinoma this is followed immediately by a rise in blood pressure and by the sensations of a typical attack of hypertension. To date medical treatment is not available, unless the observation by Espersen and Dahl-Iversen (1946) can be corroborated. They treated a patient preoperatively with methylthiouracil; complete disappearance of the paroxysmal attacks of hypertension resulted. If an operation is performed, the most critical period is the first twenty-four hours after operation. Use of many substances has been advocated to combat the ensuing shock; epinephrine in large doses has proved the most successful.

Edinburgh Medical Journal

56:129-172 (April) 1949

Functional Nervous Disorders in Childhood. J. L. Henderson.—p. 129.
Changing Concepts in Therapeutics. D. M. Dunlop.—p. 146.
Discoverers of Thoracic Cardiac Nerves. G. A. G. Mitchell.—p. 156.
Points of Local Chest Tenderness in Post-Operative Pulmonary Embolism. C. K. Robertson.—p. 160.

Journal of Laryngology and Otology, London

63:321-362 (June) 1949

Histopathologic Investigations on Localization, Number, Activity and Extent of Otosclerotic Foci. B. Nylén.—p. 321.
Chronic Otitis Media. F. McGuckin.—p. 328.
Points in Pathology, Diagnosis and Treatment of Chronic Maxillary Sinusitis. J. C. Ballantyne and A. R. Rowe.—p. 337.
Nasopharyngeal Tumors. J. I. Munro Black.—p. 342.

Lancet, London

1:1031-1078 (June 18) 1949

*The Menstrual Cycle. S. Zuckerman.—p. 1031.
*Return of Tone in Blood-Vessels of Upper Limb After Sympathectomy. H. Barcroft and A. J. Walker.—p. 1035.
Temporal Arteritis: Report of 7 Cases. S. L. Kaye.—p. 1039.
Partition Chromatography on Paper: Identification of Reducing Substances in Urine. R. H. Horrocks and G. B. Manning.—p. 1042.
New Type of Encephalopathy After General Anesthesia. A. R. Hunter.—p. 1045.
Injection Treatment of Hydrocele. W. W. Wilson.—p. 1048.
Retarded Growth of Limbs as Sequel of Encephalitis Lethargica. R. T. Gaunt.—p. 1049.
Abdominal Relaxation with Decamethonium Iodide (C10) During Cesarean Section. I. M. Young.—p. 1052.
Proguanil Prophylaxis and Intercurrent Infection. D. B. Jelliffe.—p. 1052.

The Menstrual Cycle.—Zuckerman reviews the present status of knowledge on the menstrual cycle. He discusses the time of ovulation, the phases of the menstrual cycle, menstrual cycles without ovulation, uterine periodicity in the absence of ovaries and the hormonal control of the menstrual cycle. He shows that in spite of a vast amount of experimental inquiry into the factors that control periodic uterine bleeding, the limits of action and the interaction of the different steroid hormones on the primate uterus are still far from understood. There has been a tendency to regard the uterus as a purely passively reacting organ, but there are factors which suggest that the uterus may have a rhythm of its own.

Return of Tone in Blood Vessels After Sympathectomy.—The experiments described by Barcroft and Walker were made on 14 sympathectomized hands. The blood vessels in 5 hands were presumably normal, since they had been sympathectomized for excessive sweating. The other 9 hands had been sympathectomized for vascular disease, Raynaud's disease in 6, chilblains in 2, and acrocyanosis in 1. In some of these structural changes had occurred in the vessels, with the result that they could not dilate as widely as normal vessels. A simple plethysmographic method is described for determining the rate of the blood flow in the hand. The blood flow was determined daily for a fortnight after sympathectomy. In every hand tested the most rapid flow was recorded either immediately after sympathectomy or on the following day. The rates of flow through the hands with normal vessels which could dilate fully when the sympathetic tone was released were generally greater than those through the hands with diseased vessels. The results show that the blood flow in all hands decreased rapidly during the remainder of the first week and more slowly during the second. Thus the rapid flow of blood in the freshly sympathectomized hand lasts no longer than forty-eight hours. It has declined by the end of the first week to about a quarter of its postoperative rate, and it has decreased after two weeks to about an eighth. At first sight the observation that the blood flow in the diseased vessels soon returned to near the preoperative rate seems to throw doubt on the value of sympathectomy as a therapeutic measure for vascular disease of the fingers. However, there is conclusive evidence of the excellence of the clinical results. Why blood vessels recover their tone after sympathectomy is still unexplained.

1:1079-1124 (June 25) 1949

Social Factors in Obstetrics. D. Baird.—p. 1079.
Therapeutic and Neurological Aspects of Peripheral Nerve Injuries. W. R. Henderson and D. Taverner.—p. 1084.
Haemolytic Disease of the Newborn Due to Anti-A-Antibodies. K. E. Boorman, B. E. Dodd and R. H. Trinick.—p. 1088.
Streptomycin in Treatment of Actinomycosis: Report on 3 Cases. J. A. Torrens and M. W. W. Wood.—p. 1091.
Intestinal Actinomycosis Treated with Streptomycin. H. S. Pemberton and W. R. Hunter.—p. 1094.
*Retinitis Pigmentosa Associated with Cystinuria: Two Uncommon Inherited Conditions Occurring in Family. W. D. W. Brooks, M. A. Heasman and R. R. H. Lovell.—p. 1096.
*Treatment of Hay-Fever by Injection of Nasal Mucosa with Alcohol. B. Russell.—p. 1098.
Diphtheria Prophylaxis in Very Young Infants. G. Bousfield.—p. 1100.

Retinitis Pigmentosa Associated with Cystinuria in a Family.—Brooks and associates point out that the association of two inherited abnormalities represents an aid in mapping human chromosomes. Retinitis pigmentosa, though uncommon, is not rare as a hereditary disorder, and most cases are not associated with other defects except perhaps cataract, which may be regarded as part of the disease. As far as the authors were able to determine, retinitis pigmentosa and cystinuria have not been reported as occurring together in the same patient and family. The authors describe the history of a family in which retinitis pigmentosa was associated with cystinuria. The first patient in whom the association of retinitis pigmentosa with cystinuria was discovered was an unmarried Jewess, aged 40. Micturition was frequent. The patient's eyesight had been poor, and night blindness had been noticed since early childhood. Retinitis pigmentosa was diagnosed when she was 19. For the past thirteen years she had been conscious of increasing limitation of her peripheral visual fields and dimming of central vision. The patient's parents were distantly related, being third (or fourth?) cousins. The mother of the patient was examined specifically for retinitis pigmentosa and cystinuria, and neither condition was present. The father died at the age of 37; he was never examined specifically for retinitis pigmentosa or cystinuria, but he is remembered as having had good eyesight. The eldest brother of the patient and his two daughters were free from cystinuria and from retinitis pigmentosa. However, another brother had both cystinuria and retinitis pigmentosa. A younger sister had cystinuria but no visual disturbances. Of the two younger brothers, 1 had retinitis pigmentosa and was not examined for cystinuria, the other, who was lost during the war, had apparently been normal. The evidence from this pedigree justifies consideration of the possibility of linkage of the retinitis pigmentosa and cystinuria. Two hypotheses may be considered: (1) retinitis pigmentosa and cystinuria are both recessive, or (2) retinitis is recessive and cystinuria is dominant.

Alcohol Injection for Hay Fever.—For the past twenty years Russell treated pollen allergy by a method which depends on the fact that the mucosa in nasal allergy is not equally sensitive throughout its extent. Except in rare instances the greater part of the visible mucosa does not seem to be concerned in responding to allergens. There are usually small well defined patches which are always on guard, even to some degree in winter, and their exquisite ticklishness can be benumbed by the injection into them of alcohol. The idea of desensitizing the nasal mucosa by injections of alcohol dates back many years. Russell first heard of it from an American colleague during the first world war and first used it in 1921. The treatment is given a week or more before the patient expects to begin sneezing. After listing the instrumentarium required for the treatment and after stressing that the alcohol should be introduced into, not through, the mucosa, the author says that within an hour or two of injection the nasal passage is usually occluded by swelling of the mucosa, the obstruction being increased by a plastic exudate from the area injected. It is therefore undesirable to inject both sides of the nose at once. About four days later it is usually possible to free the nasal passage for breathing by removal of the plastic exudate; after this the opposite side may be treated. Alcohol has been injected, usually with benefit, in more than 100 patients. The result as a rule is to reduce symptoms below the threshold of distress, and often to obliterate them for at least one season. A year later the injected areas may still be insensitive, but a cresentic area at the periphery may have become sensitive—a condition easy to treat with a small further injection. Contraindications to this treatment are the presence of inflammation in the teeth or sinuses, and the (rare) existence of characteristic sensitivity over most of the nasal mucosa.

Proceedings of Royal Society of Medicine, London

42:375-458 (June) 1949. **Partial Index**

Aspects of Non-Gonococcal Infections of Genital Tract. A. H. Harkness.—p. 390.
Hypotheses Concerning the Aetiology of Dental Caries. G. J. Parfitt.—p. 393.
Aetiology of Swimmers' Exostoses of External Auditory Canals and of Associated Changes in Hearing. W. S. Adams.—p. 424.
Practical Value of Peripheral Nerve Repair. H. J. Seddon.—p. 427.
Retro-Orbital Tissues as Site of Outflow of Cerebrospinal Fluid. E. J. Field and J. B. Brierley.—p. 447.

Tubercle, London

30:145-168 (July) 1949

Primary Serous Pleural Effusion. A. J. F. Eberle.—p. 146.
Irregular Discharges. G. Day.—p. 152.
Tuberculosis in Nurses in New Zealand Hospital. B. C. Thompson.—p. 155.

Acta Medica Scandinavica, Stockholm

133:1-72 (March 26) 1949. **Partial Index**

*Perforation of Infarcted Interventricular Septum Diagnosed Ante Mortem. R. Grelland.—p. 1.
Detoxification of Benzoic Acid by Glycuronic Acid under Normal Conditions and in Liver Disease. B. Borgström.—p. 7.
Gallstone Formation and Gallstone Disease. A. Adlercreutz.—p. 19.
Humoral Regulation of Normoerythropoiesis. G. Oliva, F. Chiuini and C. Tramontana.—p. 27.
*Does Urine Stasis Influence Development of Arterial Hypertension? F. Raaschou.—p. 31.
Arterial Orthostatic Anemia: Aspects of Clinical Forms and Electrocardiographic Changes. B. Sjögren.—p. 45.
Löffler's Syndrome—Periarteritis Nodosa. J. Tomenius.—p. 55.

Perforation of Infarcted Interventricular Septum.—Grelland reports a man, aged 60, in whom perforation of the interventricular septum resulting from coronary occlusion was diagnosed ante mortem. The patient presented typical symptoms of myocardial infarction. His condition was fairly good until the ninth day, when acute symptoms of right heart failure developed associated with physical signs of a septal defect. The patient died twenty-four days after the occurrence of the infarction and fifteen days after the septal perforation. At autopsy a thrombus was found in the right coronary artery with infarction of the posterior part of the septum. In the anterior, lower part of the infarcted area a perforation 1 cm. in diameter was found. The report is illustrated by a photograph of the perforated septum, by phonocardiograms and by electrocardiograms.

Urinary Stasis and Arterial Hypertension.—Raaschou studied postmortem material to establish the incidence of urologic disease among hypertensive patients. All cases of moderately severe and severe hydronephrosis and pyonephrosis, a total of 399, were selected from a total of 6,505 necropsies performed at a Copenhagen hospital from 1937 through 1944. The control series comprised 583 successive necropsies from the postmortem material in 1945. Eighty-three children under 15 years of age were excluded, leaving 500 patients. The incidence of "urologic hypertension" was lower in his necropsy material than he had originally supposed. Noninfected hydronephrosis does not seem to cause renal hypertension. The two conditions occurring together is probably a coincidence, and great reserve is advisable with regard to nephrectomy in cases of noninfected hydronephrosis with associated arterial hypertension. In persons under 60 years of age hydronephrosis complicated by pyelonephritis seems to have some influence on the incidence of arterial hypertension and on the average blood pressure. In persons over 60 years of age the disease seems not to influence the development of arterial hypertension. That the incidence of cerebral hemorrhage is much lower in the hydronephrosis groups than in the control group and that complication by pyelonephritis has no influence on the incidence of cerebral hemorrhage are in accord with the observations in studies of blood pressure in patients over 60 years of age. About ten years ago American writers, on the basis of urographic observations, claimed that about 50 per cent of patients with "essential hypertension" have urologic disease. It appears now that this estimate must be greatly reduced. The present investigation indicates that urinary stasis cannot be assumed to play a part in the causation of arterial hypertension. Only chronic pyelonephritis, notably its atrophic form, may occasionally be complicated by arterial hypertension.

Archivos de Medicina Infantil, Havana

18:67-90 (April, May, June) 1949. **Partial Index**

*Barbituric Coma in Infant: Picrotoxine Treatment. D. Sosa Bens.—p. 89.

Barbituric Coma.—A child aged 2 years swallowed six tablets of 0.10 Gm. each of amobarbital sodium (amytal sodium®), in the belief that it was candy. She was in deep coma within one hour. Treatment consisted of washing out of her stomach, of intravenous infusion of dextrose in normal solution, and of four intravenous injections of 0.5 cc. of a 30 per cent solution of picrotoxin at half-hour intervals. One hour after the last intravenous injection, one intramuscular injection of 0.5 cc. of the same solution was given. Amino acids were administered by mouth. The patient recovered on the first day of treatment.

Deutsche medizinische Wochenschrift, Stuttgart

74:721-752 (June 10) 1949. **Partial Index**

Development and Present State of Tuberculosis in German and Other Countries. E. Kröger and H. Reuter.—p. 721.
*Two Years Experiences with Thiosemicarbazone Tb I/698 in Severe Pulmonary Tuberculosis. A. Sturm.—p. 726.
Shock and Collapse in Obstetrics (III.). C. Müller.—p. 732.
Actually Increased Incidence of Acute and Subacute Atrophy of Liver. K. Brass.—p. 733.

Thiosemicarbazone Tb I/698 in Pulmonary Tuberculosis.—Sturm treated 117 patients with severe, exudative, cavernous pulmonary tuberculosis with Domagk's 1-(*p*-acetylaminobenzaldehyde) thiosemicarbazone (thiosemicarbazone Tb I/698). Sixty-four patients (54.7 per cent) showed an increase in body weight of 5 (2 Kg.) to more than 10 pounds (5 Kg.), while 27 patients (23.1 per cent) showed no increase in weight and 26 (22.2 per cent) continued to lose weight. Of the 117 patients 92 were febrile; in 35 of the latter the temperature was restored to normal and in an additional 35 the temperature was lowered. Blood sedimentation rate was restored to normal or reduced in 96 patients (82 per cent); it was not influenced in 21 (18 per cent). Of 78 strongly positive sputums, 57 became negative or weakly positive, and of 39 weakly positive sputums 16 became negative. Roentgenography demonstrated that fresh exudative infiltration in the lung tissue and fresh hematogenous dissemination are particularly amenable to treatment with thiosemicarbazone Tb I/698 while patients with large cavities and induration and with caseous pneumonic processes were resistant. The analysis of the effect of the new drug suggests that the drug has a double action by changing the reaction of the organism to the pathogen and by a chemicobacteriostatic effect on the tubercle bacillus itself. Severe granulocytopenia occurred in 2 patients, but this risk is no greater than that associated with aminopyrine therapy, provided that 0.05 Gm. of the new drug is employed as initial dose and that the daily total dose does not exceed 0.2 or at most 0.3 Gm. A more active treatment of exudative pulmonary tuberculosis may be possible by spray inhalation of the new drug, by injection into the cavities, by Monaldi's suction drainage and by extension of indications for pneumothorax and phrenic nerve exeresis followed by pneumoperitoneum.

Deutsche Zeitschrift für Nervenheilkunde, Berlin

160:137-298 (April 9) 1949. **Partial Index**

*Microscopic Observations on Changes in Cardiac Ganglions in Aged Persons and During Coronary Sclerosis. H. Hermann.—p. 137.
Insulin Shock Therapy in Certain Disorders of Persons with Vasopathico-Allergic Constitution (Vasopathic Disorders, Idiopathic Migraine, Thromboangiitis Obliterans). H. Greving and K.-H. Schiffer.—p. 155.
Significance of Mesodermal Tissue in Regeneration of Nerves. F. Hiller.—p. 176.
*Cerebral Cysts Following Cerebral Contusions. B. Borschel.—p. 221.
Animal Experiments on Central Genesis of Diphtheria. E. Frick.—p. 237.
Pathologic Anatomy of Herpes Zoster. H. Orthner.—p. 251.

Changes in Cardiac Ganglions in the Aged and During Coronary Sclerosis.—The observations reported by Hermann were made on 65 human hearts: 25 from persons with severe coronary sclerosis, 25 from persons between 60 and 88 years of age, but without coronary sclerosis and 15 from persons up to 40 years of age, these last served as controls. Particular attention was given to the ganglions in the posterior wall of the right auricle. The silver impregnation method of Bielschowsky-Gross was used. In every case of coronary sclerosis the majority of the nerve cells showed changes in the nuclei and the cell plasma. The nuclei of the ganglion cells were vacuolized, pyknotic, deformed or otherwise defective. Swelling, vacuolation or homogenization characterize the changes in the nerve plasm. The dendrites of the ganglion cells were puffed up in some sections, contained vacuoles or formed hollow cylinders. The covering plasmodium of diseased ganglion cells appeared spotted or streaked and contained vacuoles. It is not possible to deduce the presence of coronary sclerosis from the pathologic changes that exist in the nerve cells of the posterior wall of the right auricle, because the same changes may be found in the nerve tissue in other clinical conditions. Young ganglion cells mature into adult cells throughout life; at the same time other nerve cells degenerate. In young persons the ganglions contain more young and healthy and less degenerated nerve cells than is the case in older adults and in the aged.

Brain Cysts Following Cerebral Contusion.—Borschel presents the histories of 6 patients in whom brain cysts developed following contusion of the brain. Four cysts were located in the occipital part of the brain, 1 in the frontal part and one in the temporal lobe. These locations corroborate the concept that the poles of the brain are predisposed to traumatic lesions. In 4 cases epileptic reactions resulted and led to diagnostic clarification. One patient presented a neurasthenic picture and one had a syndrome indicating involvement of the frontal lobe. The neurologic manifestations corresponded to the localization of the cyst. Contrary to observations made by Kroll, signs of increased pressure on the brain were absent. Diagnosis of the cysts requires roentgenographic study with air as the contrast medium. When there is no communication with the cerebrospinal fluid spaces, direct puncture can be performed. The differential diagnosis must rule out cystic tumors, cysts caused by parasites and cavity formations resulting from malacia or hemorrhage. In the pathogenesis one must consider the direct mechanical factors of the contused area and the circulatory factors. These may help to explain the large size of some cysts after apparently mild trauma.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

93:1397-1472 (April 30) 1949. **Partial Index**

Experiences with Culture of Micro-Organisms from Blood. J. G. Heyl and J. H. Bekker.—p. 1410.
Results of Treatment with Dicumarol in 48 Patients with Venous Thrombosis and Pulmonary Embolism. T. Boen Kie.—p. 1413.
*Arteriovenous Fistula of Long Duration. P. J. Zuidema.—p. 1421.

Arteriovenous Fistula of Long Duration.—Zuidema describes a man, aged 56, who at the age of 17 sustained a knife wound in the left thigh. In later years the man noticed that he was able to suppress attacks of palpitation by forceful bending of the left knee. This maneuver decreased the pulse frequency by from 20 to 30 beats (Branham's sign). Later, circulatory disturbances developed in the left leg and foot. The heart was considerably enlarged, particularly to the left, but no signs of heart failure were present. Signs of chronic venous insufficiency of the left leg (edema, varicose veins and ulceration) were increasing and caused much discomfort. Surgical closure of the fistula was considered, but in view of the great risk in such a long-standing condition an operation was not recommended.

Neurobiologia, Pernambuco

12:1-98 (March) 1949. **Partial Index**

*Tumor Metastases of Brain and Tumors of Nervous System Producing Metastases. C. Gama.—p. 1.

Tumor Metastases of Brain.—From the 692 brain tumors and 41 spinal tumors treated by Gama, he chose tumors which represent true metastases from other organs. There were 11 tumors which invaded the brain by way of the blood stream, 3 by way of the lymphatic channels and 4 spinal cord and brain metastases by way of the arachnoid space. The histologic nature of those tumors was as follows: carcinoma 67 per cent, hemangioblastoma 16.5 per cent, medulloblastoma 5.5 per cent, hypernephroma 5.5 per cent, sarcoma 5.5 per cent. The primary tumor was in the mammary gland in 28 per cent, in the lung in 17 per cent, in the base of the skull in 11 per cent, in the cerebellum in 11 per cent, in the cerebrum in 5.5 per cent, in the scalp in 5.5 per cent, in the liver in 5.5 per cent, in the uterus in 5.5 per cent and in the adrenal glands in 5.5 per cent.

Presse Médicale, Paris

57:519-534 (June 11) 1949. **Partial Index**

*Curative Effect of Thiosemicarbazone Tb I [1-(p-acetylaminobenzaldehyde) thiosemicarbazone] in Experimental Tuberculosis of Mice. C. Levaditi.—p. 519.
*Combined Coramine-Electroshock Therapy in Treatment of Psychotic Excitement. M. and G. Jacquel, Amoussou and Racadot.—p. 521.

Thiosemicarbazone in Tuberculosis of Mice.—Levaditi administered 10 mg. of 1-(para-acetylaminobenzaldehyde) thiosemicarbazone (thiosemicarbazone Tb 1) for forty-six days to mice which were previously infected by the intravenous route with 1 mg. of a three week culture of the H 512 strain of Mycobacterium tuberculosis. Results proved that this synthetic chemical derivative prepared by Domagk and associates is an active therapeutic agent in experimental tuberculosis of mice, but it is less effective than streptomycin. The effect of the new drug resembles that of para-aminosalicylic acid, and it may be superior to the latter. The author's research confirmed Domagk's experimental observations in guinea pigs.

Combined Nikethamide-Electroshock Treatment of Psychotic Excitement.—Jacquel and co-workers treated 30 patients presenting states of psychotic excitement by Fabing's combined nikethamide-electroshock therapy. The patients received daily intravenous injections of 6 or 7 cc. of nikethamide followed by electrically induced convulsions. Treatment for six days was sufficient in the majority of the cases. Results confirmed those obtained by Fabing. Psychomotor excitement in manic patients was reduced rapidly, and their general condition was improved; results were satisfactory even in patients with syndromes of long standing or with presenile conditions. In schizophrenic states the behavior was improved, and there was a beneficial effect on the patient's impulsion. These observations call attention to the importance of the problem of cerebral circulation in psychiatry.

Revue Médicale de Liège

4:317-348 (June 15) 1949

*Hemorrhagic Adrenalitis. Considerations of Two Mechanisms Responsible for Certain Rapid Deaths, Mysterious to the Practitioner. J. Firket, E. Nizet and A. De Scoville.—p. 317.
Department of Anesthesia of University of Oxford. M. Hanquet.—p. 325.
Subacute Appendicitis with Symptomatology of Cyst of Ovary. J. Naveau.—p. 327.

Hemorrhagic Adrenalitis.—Firket and co-workers report 2 cases of hemorrhagic adrenalitis with sudden death in a woman aged 32 and in a boy aged 6, both of whom apparently had been in good health. In the woman death occurred within forty-eight hours after the abortion of a 4½ month fetus. Necropsy revealed bilateral hemorrhagic adrenalitis which resulted from bacillary embolism, Clostridium welchii being transported by the blood stream from the uterus to the adrenals. The boy presented a typical case of Waterhouse-Friderichsen syndrome with vomiting, diarrhea, generalized purpura, stupor and coma resulting in death within twenty-four hours after he had fallen down in the street while playing. The tonsils showed a pultaceous exudate. Blood culture was negative. Necropsy revealed considerable vasodilatation in the adrenals with subendothelial fibrinous depots in the capillaries of the glands and definite endothelial ruptures with extravasation of blood. The adrenals were probably affected by a hyperergic disease due to the localization of an allergen probably of bacterial origin, but resulting from a commonplace infection such as sore throat. In cases of this type it is not sufficient to combat the insufficiency of the adrenals because it may be moderate or even absent. Anti-infectious agents such as the sulfonamide compounds, intravenous penicillin and antimeningococcic serum should be administered. The antiallergic effect of ascorbic acid (vitamin C) should not be overlooked.

Ugeskrift for Laeger, Copenhagen

111:497-520 (May 5) 1949. **Partial Index**

*Catheterization of Heart in Congenital Heart Disease. P. Eskildsen, H. Gøtsche and A. Tybjaerg Hansen.—p. 497.
Operations for Congenital Affections of Heart and Large Blood Vessels. E. Husfeldt.—p. 506.
Spontaneous Variations in Metabolism in Neuroses and Psychopathy. H. I. Schou.—p. 507.
Methyl Violet as Antiseptic. P. Wedel.—p. 509.

Catheterization of Heart in Congenital Heart Disease.—Eskildsen and his associates deal briefly with the technic of catheterization of the heart. They review the importance of the method in the diagnosis of congenital heart disease on the basis of 122 cases examined in the Rikshospital. They stress that both registration of the pressure and the pressure variations in the different cavities of the heart and the large vessels as well as oxygen analysis of numerous blood samples from these cavities are essential. Cyanotic patients should be examined between the ages of 3 and 10 years, acyanotic patients at about the age of 6, the conditions for both examination and operation being most favorable at these ages.

Book Notices

Medicine Throughout Antiquity. By Benjamin Lee Gordon, M.D., Attending Ophthalmologist to Shore Memorial Hospital, Somers Point, N. J. Foreword by Dr. Max Neuburger. Cloth. Price, $6. Pp. 818, with 157 illustrations. F. A. Davis Company, 1914-16 Cherry St., Philadelphia 3, 1949.

Good medical histories are few and good medical histories that deal with ancient medicine are rare indeed. Dr. Gordon's book should therefore be a welcome addition to the slender field. A volume of over 800 pages, well illustrated and well printed on good stock, it should find wide acceptance not only in the limited circle of the profession that is historically minded but in a much wider group that will appreciate the opportunity of obtaining greater familiarity in a cultural field that is commonly neglected in the early years of professional activity.

Dr. Gordon writes well and covers a wide territory without for a moment being superficial; he does not entangle the reader in pedantic detail. The purpose of the book, as the author states, "is to present an historical résumé of medicine as it was conceived, developed and practiced by the various peoples of antiquity. A determined effort has been made throughout the work to emphasize outstanding historical facts."

The material is remarkably well organized. It begins with a survey of early man and the archeologic evidences of prehistoric medicine and develops in sequence the medical concepts that prevailed in the early eastern world. The Greco-Roman period is well documented. An unusual excursion is provided by a study of Talmudic medicine.

In a survey of the text I can take exception to but one interpretation, and that is the suggestion that Hippocrates was interested in "astrology" because Hippocrates wrote that "attention must be paid to the rising of the stars, especially to those of Sirius and Arcturus and further, to the setting of the Pleides, for most diseases reach a crisis during such periods." The position of the stars provided the Greek with a calendar. Hippocrates merely called attention to the fact that diseases change with the seasons. Then, as now, seasonal extremes provided hurdles for the sick organism, "for most diseases reach a crisis during such periods," as Hippocrates expressed it.

Dr. Gordon's book makes evident an unusual breadth not only of medical knowledge but of the associated and underlying fields of study which have in the past century contributed to our understanding of man's cultural rise.

Psychology of Personal Adjustment: Students' Introduction to Mental Hygiene: By Fred McKinney, Professor of Psychology and Psychologist in the Student Health Service, University of Missouri, Columbia, Mo. Second edition. Cloth. Price, $6. Pp. 752, with illustrations. John Wiley & Sons, Inc., 440 4th Ave., New York 16; Chapman & Hall, Ltd., 37-39 Essex St., Strand, London, W.C.2, 1949.

This is a book of practical psychology, with particular application at the college ages. Much of the material in the text has been taught in orientation, mental health and vocational guidance classes. Essentially, the book presents subject matter close to the life of the student and appropriate to his needs in meeting the many perplexing problems encountered during college years. However, such adjustment is closely integrated with postcollege life.

After discussion dealing with the adjustment process in general and orientation to college, specific topics, such as concentration, learning and thinking, understanding one's self, personality development and efficiency, personal orientation, vocational selection, premarital adjustment and social and emotional development, are presented. Except for the final chapter, which is really a summary section covering total adjustment to living, the fifteen chapters in the book may be regarded as units which can be used independently or rearranged to fit the needs of specific teaching situations.

Suggestions for supplementary reading and comprehensive lists of references are given at the end of each chapter. The book will probably be most useful for orientation purposes in the early college years, but may well be utilized as a supplement to courses in general and applied psychology or in courses in mental hygiene or personal adjustment.

The Rhesus Factor. By G. Fulton Roberts, M.A., M.B., Demonstrator in Pathology in the University of Cambridge, Cambridge, England. Second edition. Paper. Price, 3s.6d. Pp. 64. William Heinemann Medical Books, Ltd., 99 Great Russell St., London, W.C. 1, 1949.

This pamphlet is intended as an introduction to the subject of the Rhesus factors for the clinician. The demand for such a pamphlet is evident from the fact that the first edition has gone through five printings and a second edition had to be prepared. The presentation is simple and clear. The booklet makes no attempt to be complete or detailed and lists only twenty references, mostly British sources. Accordingly, the presentation is somewhat unbalanced and the booklet repeats some errors characteristic of British writings on the subject, such as the incorrect assumption that one's Rh genotype can be determined by serologic tests alone without study of the family. While an attempt is made to introduce the Fisher C-D-E notations in the fifth and sixth chapters, it is significant that in the seventh chapter and elsewhere in the booklet the author is compelled to use the more correct and clear international Rh-Hr nomenclature. In the booklet, the important original contributions of American workers are mostly either ignored or used without adequate citation of the original source. The bibliography should also have included references to more detailed and authoritative reviews, such as those of Potter, Wiener and Bessis, which could be consulted by those readers desiring additional information regarding the subject.

Clinical Chemistry in Practical Medicine. By C. P. Stewart, M.Sc., Ph.D., Senior Biochemist, Royal Infirmary, Edinburgh, and D. M. Dunlop, B.A., M.D., F.R.C.P., Christian Professor of Therapeutics and Clinical Medicine, University of Edinburgh. Third edition. Cloth. Price, $5. Pp. 324, with 30 illustrations. Williams & Wilkins Company, Mt. Royal & Guilford Aves., Baltimore 2, 1949.

This is a completely revised edition of a British text, which aims to provide the physician with the logic behind laboratory determinations, the correct way of performing them and their use in arriving at correct diagnosis and therapy. The aim is praiseworthy but not original. The shelf of pamphlets, booklets, books and two volume treatises on this subject has been growing rapidly over the years. Yet their common aim, that of integrating laboratory and clinical medicine, is far from being realized. The average medical student becomes slightly bewildered during his preclinical biochemistry courses and then proceeds to forget both the useful and the useless information he has acquired. In his clinical years and during hospital residence he falls into the habit of "ordering" tests. Thereafter a chemical determination becomes a number—glucose 80, urea 15 and the like; the more such numbers a patient's chart possesses, the "better" is the "case worked up." Only when the teaching of biochemistry will become better integrated with that of the clinical sciences can one expect "understanding" of laboratory determinations.

The present book is, on the whole, a simple presentation of the subject, oriented clinically. Yet the chapters on the metabolic rate and on neutrality regulation are overburdened with unnecessary calculations, formulas and schemes which may effectively discourage their reading by the harried practitioner.

The style is good, the information is correct and reasonably up to date and the index is well arranged.

Eden & Holland's Manual of Obstetrics. By Alan Brews, M.D., M.S., M.R.C.P., Obstetrical and Gynaecological Surgeon, the London Hospital, London. Ninth edition. Fabrikoid. Price, 42s. Pp. 796, with 441 illustrations. J. & A. Churchill, Ltd., 104 Gloucester Place, London, W. 1, 1948.

The first edition of this well known textbook on obstetrics was published in 1906. This ninth edition has maintained the high standards of the preceding editions. Although it represents to a large extent the practice and teaching of obstetrics at the London Hospital, in its widespread popularity it must necessarily reflect British obstetric thought.

The book is logically divided into nine parts and an appendix. The sequence consists of normal and abnormal pregnancy, normal and abnormal labor, the puerperium, the fetus, the newly born child, operations and maternal morbidity and mortality. The various chapters contain numerous well chosen illustrations, many of which have been taken from standard English and American textbooks.

The content of the book is inclusive and up to date. There are few ideas that deserve any serious comment. Many of the conclusions are similar to those that have been made in this country's large medical centers. The value of pelvimetry by conventional methods is seriously questioned. However, in the discussion on delivery of women with contracted pelves, the induction of premature labor is still seriously considered. The hot uterine douche is recommended for postpartum hemorrhage, a practice which has been discounted completely in the United States. The term "conservative" for treatment is not a good one, although it still retains considerable popularity in this country. It is definitely not conservative to deliver a patient through the pelvis at the cost of an injured baby, irreparable trauma and even maternal death, nor is it radical to do a cesarean section to reduce the likelihood of these hazards. In a discussion of ergot, the isolation of the active principle in 1935 is credited to Dudley and Moir, but it was discovered and described simultaneously in two other laboratories.

None of these criticisms detract from the excellent text, which can be recommended to anyone interested in the specialty. It is well written and interesting to read and should retain its many friends in all English-speaking countries.

Manual of Medical Emergencies. By Stuart C. Cullen, M.D., Professor of Surgery, State University of Iowa College of Medicine, Iowa City, and E. G. Gross, M.D., Professor and Head of Department of Pharmacology, State University of Iowa College of Medicine. Cloth. Price, $3.75. Pp. 267, with 29 illustrations. The Year Book Publishers, Inc., 200 E. Illinois St., Chicago 11, 1949.

A physician seldom has time to consult the literature exhaustively when confronted with a medical emergency. The manual prepared by Drs. Cullen and Gross deals particularly with immediate treatment and devotes little space to diagnosis and later therapy. The authors discuss asphyxia and artificial respiration, oxygen therapy, circulatory emergencies, acute poisoning, local anesthetic drug reactions, head injuries, allergic disturbances, the severely agitated, convulsive and comatose patients and a few miscellaneous emergencies, such as gastric dilatation, burns and other heat injuries. A chapter dealing with venipuncture and another dealing with drugs useful in emergencies are included.

The selection of subject matter for a book of this kind is difficult, because the author must decide which illnesses fall within the province of his subject and which are, for example, surgical; among the medical illnesses he must select the emergencies from the less urgent. The authors have limited their field significantly; for example, they do not discuss severe thyrotoxicosis, transfusion reactions, the addisonian crisis, botulism, conditions wherein pronounced hematemesis occurs, acute glaucoma or renal colic. Asphyxia, circulatory disturbances, acute poisoning and head injuries are discussed at greatest length.

In general, the procedures recommended will doubtless meet approval. Valuable information frequently omitted in larger volumes is presented in the discussions of general principles of emergency treatment, oxygen therapy and medical care of the comatose patient. Emphasis is fittingly given to problems of asphyxia in the seriously sick and to procedures for maintaining a patent airway. The chapters on acute poisoning and on head injuries are well outlined and provide sound, concise information. The book is adaptable for ready reference and, though somewhat limited in scope, should be a useful addition to the physician's library.

Sugar: Its Production, Technology, and Uses. By Andrew Van Hook, Professor of Chemistry, College of the Holy Cross, Worcester, Mass. Cloth. Price, $3. Pp. 155, with 24 illustrations. The Ronald Press Co., 15 E. 26th St., New York 10, 1949.

This book is intended for the layman who is interested in general information about the sugar industry and for others who wish to get a comprehensive picture. The author discusses the chemistry of sugar, production and refining methods for both cane and beet sugar, trade and economic aspects, a few of the by-products and, in the last chapter, a concise history of the industry, including a few philosophic considerations. The author does not go into the details of the nutritive contribution of sugar or of carbohydrate metabolism. The author states, "There are many reasons why it is desirable to increase the consumption of sugar." This statement could be questioned, especially in view of the growing problem of obesity that exists in our adult population. In defense of the author, it must be said that he clearly indicates that calories are only one of the important items of the diet.

The main purpose of the book is accomplished. It presents a well balanced consideration of the subject and succeeds admirably in maintaining the interest of the reader.

Das Krebsproblem: Einführung in die allgemeine Geschwulstlehre für Studierende, Ärzte und Naturwissenschaftler. Von K. H. Bauer, o.ö. Professor für Chirurgie an der Universität Heidelberg. Paper. Price, 42 marks. Pp. 758, with 71 illustrations. Springer-Verlag, Jebenstrasse 1, Berlin-Charlottenburg 2, 1949.

There is extensive literature on cancer widely distributed in many books and journals. Much of the work has been done by specialists, and the results of their work, due to its technical nature and language, have been largely incomprehensible to practicing physicians caring for patients with cancer. The purpose of the author of this volume was to gather as many of the significant scientific data as possible and to present them in an understandable way to the physician, with interpretations based on the author's wide clinical experience. The results have been successful. Many thousands of references have been consulted, and the results have been digested and presented in an interesting and scholarly manner.

The book has been organized in three main divisions, namely, the characteristics, the development, and the treatment of cancers of animals and man. In the first section the nature of the disease, statistics, pathology and biochemistry of cancer are reviewed. In the second section the origin of cancer has been considered from the standpoints of genetics, hormones, viruses, chemicals and physical agents. In the third section the chemotherapy of animal tumors and the diagnosis, available methods of treatment and prophylaxis of cancer are presented. The final section consists of supplementary data which appeared just before publication of the work bringing it up to date.

This volume was prepared under obvious difficulties, and some of the important foreign literature was not available to the author. Profressor Bauer has, however, largely succeeded in a task which was tremendous. As a massive contribution from the library flavored by pertinent remarks from the clinic of a practicing surgeon, this volume might be read with profit by all serious students of the cancer problem.

Sexual Behavior: Normal and Abnormal. By Eustace Chesser, M.D. Cloth. Price, $3.75. Pp. 295. Roy Publishers, A.N., 23 W. 45th St., New York 19, 1949.

The author of this book, the dust jacket informs us, is "an eminent physician and psychologist who has had wide experience as a sexologist and marriage counsellor." The main body of the work is devoted to a discussion of the emotional background and factors which underlie sexual deviations, major and minor. He includes in his list of perversions the rejection by women of the maternal role, which he calls "auto-matricide," and states that this is the greatest perversion of all.

In the early chapters he attempts to show how present day attitudes toward sexual relations develop. In the second chapter, entitled "St. Paul, Judaism and Human Relations," he stops to break a lance with St. Paul in a manner not too effectual. He classes him among "the world's most dangerous sex reactionaries" (p. 26), after a rather spotty, one-sided and superficial consideration of his place and influence on present day mores.

The author regards women as "Nature's chosen sex" and states (p. 71) that "man's assumption of superiority is due to a feeling of inferiority—that man is vaguely conscious of his true position. He knows how utterly dependent he has always been upon woman, first his mother, then his wife. He knows too that his highest achievements cannot possibly enable him to stand upon truly equal ground with woman." Dr. Chesser by the same token has little time for the "militant feminist," whom he correctly sees as an emotionally distressed female.

The main body of the work concerns itself with emotional growth and development and indicates how sexual deviations can arise from arrests and overemphasis at various phases of

infancy and childhood. The author then discusses the major sexual abnormalities and the minor deviations and their effect on marital adjustment.

The author's approach to the problem is holistic, and his discussion of "How Sex Chains are Broken" and "Methods of Treatment" are sensible, calm and well reasoned. The final chapter, entitled "Re-education for Total Living," shows evidence of the wide experience and sensible approach of the author to the problem.

The book is not a medical book in the strict sense of the word, and yet physicians who are puzzled by the various cases of sexual deviations which they encounter will find a reasonable explanation of their causation here. There is nothing new or startling to be found, except the aforementioned discussion of "auto-matricide," and, likewise, there are no hints of easy cures.

The book is calm, considered and interestingly written.

Clinical Endocrinology for Practitioners and Students. By Laurence Martin, M.D., F.R.C.P., Physician to Addenbrooke's Hospital, Cambridge, and Martin Hynes, M.D., M.R.C.P., Reader in Medicine in the University of Cambridge. Foreword by Sir Lionel Whitby, M.D., F.R.C.P., D.P.H., Regius Professor of Physic, University of Cambridge. Cloth. Price, $4.50. Pp. 222, with 33 illustrations. The Blakiston Company, 1012 Walnut St., Philadelphia 5, [1949].

The authors have undertaken a difficult task, that of writing a simple, reasonably short, clinical manual on endocrine diseases, in the face of the phenomenal, almost daily changes in our knowledge of the functions and uses of the hormones. They have succeeded, because they have emphasized those aspects of the subject which are most important from the standpoint of clinical diagnosis and therapy. The newer developments are not neglected, and the bibliography at the end of each chapter has been carefully selected. The style is simple and readable.

The book's usefulness is restricted, since it forms only an introduction to the field. The existing larger treatises may have much more detailed information, but they are often confusing to the novice. Drs. Martin and Hynes have built a textbook bridge between the beginner and the mountain of endocrine literature.

Electrocardiographic Technique: A Manual for Physicians, Nurses and Technicians. By Kurt Schnitzer, R.T., M.D. Cloth. Price, $3.50. Pp. 96, with 46 illustrations. Grune & Stratton, Inc., 381 4th Ave., New York 16, 1949.

In dealing with this short monograph, two approaches can be made. First, is it necessary? Second, how well is it done? The book is too elementary for anyone except the beginning technician. It is not advisable to have anyone but a physician do either the exercise or the anoxemia test. Shaving the hair of a male patient is not necessary and is often upsetting. It is wrong to talk about electricity or electric currents in explaining the test to any patient, as this may lead to apprehension. The electrode should not be used in applying the jelly. Paint should be removed from a pipe used for grounding. These are minor criticisms compared to the objection of the reviewer to the major importance of the monograph. Learning the technic of electrocardiography is best done through experience initiated by understudying an expert technician, supplemented by the instructions prepared by each manufacturer of electrocardiographic instruments. There seems, therefore, no useful function for this kind of book.

Maternity Care in a Spanish-American Community of New Mexico. By Sister M. Lucia van der Eerden, S.C.M.M. A Dissertation Submitted to the Faculty of the Graduate School of Arts and Sciences of the Catholic University of America in Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy. The Catholic University of America, Anthropological Series No. 13. Paper. Price, $1. Pp. 75. Catholic University of America Press, Washington, D. C., 1948.

This is a report of a study on maternal care made by the author in a small Spanish-American community during a three month period in 1944. The high maternal and fetal mortality rate in this area prompted the study. The author found that mothers did not receive prenatal care but depended on the advice and guidance of the older women of the community. Midwives had only rudimentary or no training. However, a growing minority of the people have come to look on the physician as a better attendant during pregnancy and labor than the midwife. The author concludes that, for the immediate future, trained nurse-midwives would be more acceptable to the majority of these Spanish-Americans and that their work would result in a decreased maternal mortality rate.

Biochemical Preparations. Volume I. Advisory Board: W. Mansfield Clark and others. Editorial Board: Herbert E. Carter, Editor-in-Chief, and others. Cloth. Price, $2.50. Pp. 76. John Wiley & Sons, Inc., 440 4th Ave., New York 16; Chapman & Hall, Ltd., 37-39 Essex St., Strand, London, W.C. 2, 1949.

This volume is the first of a series intended to be published every twelve to sixteen months. It is to serve as a source of reliable procedures for the preparation of biochemical compounds of interest. These procedures are authoritative and checked by a laboratory other than that of the submitter.

The preparations of the following compounds are described in volume I: adenosine diphosphate, adenosine triphosphate, *l*-analine and *l*-serine, azobenzene-*p*-sulfonic acid trihydrate, *p*-hydroxyazobenzene-*p'*-sulfonic acid, 5-nitronaphthalene-1-sulfonic acid dihydrate, casein, β-3,4-dihydroxyphenyl-*l*-analine, diphosphopyridine nucleotide, the α-glucose-1-phosphates, *l*-glutamine, *dl*-glyceraldehyde-3-phosphoric acid, lycopene, *l*-lysine monohydrochloride, lysozyme and *d*-tyrosine.

Each preparation is described as to principle, starting material, procedure, properties and purity of product and methods of preparation. Footnotes and comments on the descriptions are plentiful. References to original papers are given. This series will provide biochemists and medical investigators with preparations which can be adequately controlled and checked in order to eliminate a common source of discrepancy in biologic investigations.

Manual of Clinical Laboratory Methods. By Opal E. Hepler, Ph.D., M.D., Associate Professor of Pathology, Northwestern University Medical School, Chicago. With a foreword by James P. Simonds, Ph.D., M.D. Fourth edition. Cloth. Price, $8.50. Pp. 387, with 36 illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill., 1949.

An outline of laboratory methods primarily prepared for use in the teaching of medical students and laboratory technicians, it is not a textbook of clinical pathology. Clinical significance of tests given are not discussed in any detail. The present edition is larger and more extensively illustrated than previous editions, which should enhance its usefulness proportionately. Urinalysis, bacteriology, special gastric and duodenal contents testing, tests of hepatic function, serologic tests and clinical chemical determinations are well covered. As a guide for the instruction and use of medical students and laboratory technicians, this manual can be definitely recommended.

Living Anatomy: A Photographic Atlas of Muscles in Action and Surface Contours. By R. D. Lockhart, M.D., Ch.M., Regius Professor of Anatomy, University of Aberdeen, Aberdeen, Scotland. Cloth. Price, $4. Pp. 71, with 149 illustrations. Oxford University Press, 114 5th Ave., New York 11, 1948.

Anyone who is interested in the external physical appearance and the function of the skeletal musculature of the human body will find this book useful. The identification is extensively aided by many well executed photographs. The selection of the models and the photography are excellent.

Techniques Chirurgicales Vaginales: Possibilités et Limites. Par Eric Weber. Préface du Professeur A. Labhardt. Paper. Price, 500 francs. Pp. 144, with 126 illustrations. J.-B. Baillière et Fils, 19, Rue Hautefeuille, Paris, 6e, 1948.

This is a small, unpretentious volume describing the technic of the various gynecologic procedures. Most of the operations are illustrated by simple line drawings, which help considerably to clarify the text. The book can be read with profit by all who are interested in gynecologic surgery.

Sugar: Facts and Figures. Cloth. Pp. 159, with illustrations. United States Cuban Sugar Council, 136 Front St., New York 5, 1948.

This is a book for laymen, prepared to promote a wider public understanding of the sugar-producing industry. It tells how and where sugar is produced; it gives production and consumption data and discusses legislation affecting sugar production. The foreword is written by David M. Keiser, chairman, United States Cuban Sugar Council.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

OPERATIONS TO PRODUCE STERILITY

To the Editor:—A married couple has several normal children; the mother is in need of surgical treatment for a pelvic repair, rectocele, retroversion and infected lacerated cervix. Is the surgeon, in these circumstances, justified in doing the following procedures: (1) tying off the tubes with silk, (2) salpingostomy and (3) salpingectomy? Is there any legal liability in the performance of these operations? Should one secure a statement of authorization from a patient? M.D., Ohio.

Because of numerous inquiries received on this subject, the Bureau of Legal Medicine and Legislation has prepared the following memorandum, which comprises all the available information with respect to the legality of the operations of this nature.

A person of mature years and sound mind can ordinarily give consent to an operation on himself. The parent of a minor can give consent to an operation on his child. The guardian of a person of unsound mind may authorize an operation on his ward. Except in the gravest emergency, an operation should not be done without some such consent. The right to give such consent is limited, however, by the interest of the state in the welfare of its citizens. A person cannot subject himself, nor can a parent subject a child, nor a guardian his ward, to an operation that will jeopardize life without an adequate end in view. The state has an interest, too, not merely in the preservation of the individual but also in the perpetuation of its people through the bringing forth and the nurturing of children. The same public policy that underlies laws to prevent contraception and criminal abortion applies to operations that produce sterility, even though that policy is not written in statutes specificially forbidding such operations. Because of the absence of such statutes and of court decisions bearing on the subject, the circumstances in which a person can give valid consent to an operation of this kind are not altogether clear. Consent is doubtless valid if the operation is necessary (1) to relieve or cure some existing disease or (2) to safeguard the life of the patient when pregnancy, because of some existing disease or defect, would gravely endanger her existence. Consent is probably valid if the operation is required to prevent the birth of diseased or defective offspring, when some existing transmissible disease or taint renders that result reasonably likely to follow conception. The validity of consent to operations not required by any of the conditions named would be at least open to question. In any case the physician, before proceeding with any operation that will produce sterility, should obtain from the patient, or from his parent or guardian, and from the spouse of a married patient, written consent in a form that shows that the patient, parent or guardian—and the spouse, if his or her consent is required—consents with full knowledge of the purpose of the operation and of its effects.

A case arose in Minnesota in 1934, involving an operation to produce sterility, *Christensen v. Thornby, 255 N. W. 620.* In that case, the attending physician felt that his patient's health contraindicated any future pregnancy and the matter was discussed with the patient's husband. Because of the relative simplicity of the operation, it was agreed that the husband would submit to a vasectomy and one was performed. A future pregnancy did result, however, and a healthy baby was delivered without any detriment to the mother. The husband then refused to pay the operating surgeon and based his refusal in part on the contention that the entire agreement was against public policy. The Supreme Court of Minnesota held that in view of the fact that the operation was performed for a therapeutic reason no contravention of public policy resulted. The surgeon was permitted to recover his fee.

In an article that appeared in the *Rocky Mountain Law Review* for June 1942, entitled "Antecedent Grounds of Liability in the Practice of Surgery," by Hubert Winston Smith, the author discussed nontherapeutic sterilization operations in part as follows:

"The problem must be approached in stages, the first inquiry being whether a nontherapeutic sterilization is illegal. Castration so alters the personality and physical constitution that its performance, even with consent, would doubtless constitute the crime of mayhem under the common law. Present day sterilization procedures of vasectomy on the male and salpingectomy on the female do not have such consequences; they do not impair hormone balance, alter personality, render the subject unfit to fight or less competent to earn a livelihood. It must be observed that present day mayhem statutes both in England and a majority of American states use language which substantially broadens the common law concept of this crime. None specifically denounces sterilization. Nevertheless, in this operation we have a wounding for an asocial purpose, a breaking of the skin, a severance of an organ, and the permanent destruction of a socially useful bodily function. In many states the court will have no great trouble in finding that nontherapeutic sterilizations constitute maim, that consent to the criminal act is void for all purposes, and that the intention of the criminal statute as well as policy requires that the subject be given a right of action in tort as for a battery. It must be remembered, also, that all the elements of criminal assault and battery are present, for the surgeon intends not only the touching but the final consequences produced, of destroying the reproductive function, and the act has no justification. Without straining to make the operation into a criminal assault and battery in order to void consent, it seems possible to do so on the ground of public policy. Here we have asocial conduct, not performed to advance any valid primary interest, intentional in character and full of risk of physical injury to the subject, as well as to the public interest in maintenance of the reproductive capacity, and we look in vain for any reason why society should consider consent justification. Indeed, the contrary interests of society, it is believed, amount to a policy which will suspend the individualistic doctrines of *volenti non fit injuria* and *pari delicto*, and, because of the unnecessary risk of injury, the law of torts may well give the consenting subject a right of action for damages against the surgeon as an additional deterrent to stop non-therapeutic sterilizations.

"Non-therapeutic sterilizations may collide with public policy of the particular state in reference to birth control, for the operation is a final form of contraception. In those states which forbid birth control, non-therapeutic sterilization would seem clearly contrary to public policy. Even in those states which take a benevolent view toward contraception, it may be held that such radical and irrevocable measures as sterilization are unreasonable forms of contraception violative of the social interest in maintenance of the birth rate."

In concluding his discussion of this particular problem, Dr. Smith offers this advice:

"At the present moment, it would appear that the surgeon incurs a definite risk of civil liability in tort for doing a nontherapeutic sterilization. Before he performs such a procedure, he should consider whether any medical justification exists. That a woman has several children and the family is too poor to give proper care to further offspring, alone constitutes no more than a sociological ground, best left for legislative sanction. Courts should not bring such cases under the head of therapeutic justification by a process of stretching medical indications into a mere fiction. As in the abortion cases, the surgeon will do well to have an independent physician make an examination to verify the medical propriety of the procedure and to require both husband and wife to sign a consent form which shows that the material facts and the medical grounds for surgery were fully disclosed prior to operation."

In 1932, the Office of the Attorney General of Wisconsin was called on to render an opinion with respect to the legality of such operations, and that opinion concluded as follows:

"Offhand, it is likely to appear that a competent adult may legally consent to be sterilized, not merely as a curative or preventive therapeutic, but solely to prevent procreation. I do not say that he or she may not, but there is sufficient contraindication in the law and in the disclosed attitude of some judges, to cause one to advise physicians that it is unwise for them to perform such an operation for sterilization purposes alone.

"Sterilization has not been received by the courts with any open-armed welcome. Against the opposition of those of the public and on the courts who consider such interference with nature to be immoral or sinful, legislatures have so far made no great strides, and a great deal of what has gotten past the opposition in legislatures has succumbed in courts.

"Even if we assume that the scientific and sociological view should prevail, nevertheless the law follows science, in some fields by perhaps a generation, for the law can reflect the advances of sciences only when they have been accepted by the people generally. Science may have a duty to educate the law, but it has no duty to defy it, nor to take a serious chance with it. The consequences to a physician from the performance of an operation of this kind, should the courts hold it illegal, could

be serious. Until the law is settled, it is not prudent for a physician to perform a sterilizing operation except within the ancient field of surgery, viz., when it is a therapeutic measure.

"And if the poor relief officials should, as you suggest in your letter, become parties to the performance of such an operation, they, as well as the physician, would be liable to penalties of the criminal law in case the courts should follow the letter of the old common law and hold that change in the application thereof can be only by legislative action.

"It is not my intention in this opinion to take any position upon the religious and sociologic phase of the question. It is my personal and official opinion, however, that the legal question is better to be settled in the legislature than in the courts with some well-intentioned public official or physician as the potential victim." *(21 Atty. Gen. 940.)*

In "Hospital Organization and Management," by Malcolm T. MacEachern, M.D. (The Physicians' Record Company, Chicago), operations to produce sterility are discussed on page 787 as follows:

"The question of sterilization must also receive consideration. Until recently sterilization without pathologic indication was absolutely prohibited, but there appears to be a tendency at the present time to sterilize at the request of the patient, a practice which is to be deprecated. The ordinary means used in contraception do not concern the hospital but permanent sterilization does. It can be carried out only in the hospital and it involves the whole future life and marital relations of the patient. No hospital should ever allow a sterilization to take place in its operating rooms unless it is absolutely unavoidable or there is definite and strong pathologic indication. Consultation must be a prerequisite."

URINARY INCONTINENCE IN PARAPLEGIC PERSONS AND THE AGED

***To the Editor:*—I should appreciate knowing how to treat urinary incontinence in paraplegic, aged and other uncooperative patients. I wish particularly information as to whether indwelling catheters, attached urinals or similar devices are of any avail. In nursing homes and hospitals for chronically disabled persons, this is a big problem.** M.D., Illinois.

ANSWER.—Urinary incontinence in patients with paraplegia may be due to overflow from a bladder obstructed by dysfunction of the bladder neck. This condition can often be corrected by transurethral removal of obstructing tissue and spastic contraction at the bladder neck. In many cases the removal of only a small amount of tissue will restore normal bladder function. Cystoscopic examination usually will reveal the obstructing tissue, although in some cases it may be difficult to visualize before resection. Although the general condition of the aged or paraplegic patient may be such that any surgical procedure may seem inadvisable, the successful results and low mortality rate following resection usually justify its trial (Emmet, J. L., and Dunn, J. H.: Transurethral Resection in the Surgical Management of Cord Bladder, *Surg., Gynec. & Obst.* **83**:597, 1946). Although suprapubic drainage may seem preferable in some cases, the risk often is greater than with transurethral resection. If surgical treatment for retention is inadvisable, some other form of urinary drainage may be indicated. A catheter fastened in the urethra may irritate and, unless frequently changed, can cause urethritis or paraurethral abscess. When incontinence is present without retention the old procedure of wearing an indwelling catheter of the Foley type with day and night rubber urinal attached to the leg often has proved satisfactory. The Cunningham urethral clamp has often proved to be preferable and should be tried.

HOUSE DUST ALLERGY

***To the Editor:*—A patient, moderately sensitive to house dust, contemplates the purchase of either an attic exhaust fan or a small air conditioner for his home. Since both of these involve forced circulation of air, what effect, if any, is to be expected on this patient's allergic condition? And which of the two would be more advisable from this point of view?**

M.D., New York.

ANSWER.—Since the source of house dust allergy is chiefly in objects in the home (mattresses and furniture), any measure designed to remove dust from the outdoors will not have appreciable effect. An attic fan could not possibly improve the situation, nor would an air conditioner help under ordinary conditions. If the conditioning (filtering) system could be effectively arranged to recirculate the room air and to filter it some benefit might be possible. The patient's bedroom might be made as dust free as possible, the mattress and pillows being inclosed in dust-proof casings and upholstered furniture being removed from the room. The rest of the home should be kept as free from dust as practicable. Under such conditions a window filter in the bedroom may be useful because it can build up enough pressure to prevent contamination of the bedroom air by that from the rest of the home. If such methods fail, desensitization of the patient to house dust is advisable.

SEX DETERMINATION

***To the Editor:*—According to the theory of sex determination as expressed in The Journal May 28, 1949, how can one explain the results of these two experiments: A young sow bred to an aged boar farrowed 7 pigs, all females but the runt (85 per cent). An aged sow bred to a young boar farrowed an all male litter (100 per cent). I can cite numerous instances but these are the most outstanding.**

D. J. Underwood, M.D., Parkville, Mo.

ANSWER.—All available evidence indicates that the sex of a mammal is determined at the time of fertilization. The sperms of a mammal are of two types, an X-chromosome-carrying type and a Y-chromosome-carrying type. These two types, it appears certain, are produced in equal numbers. In other words, half the sperm produced are X carrying and the other half Y carrying. Eggs produced are all X carrying. Accordingly, half the fertilized eggs should possess 2 X-chromosomes and, on the basis of available evidence, should develop into females, whereas the other half should possess an X-chromosome and a Y-chromosome and should develop into males. In other words, a 50:50 conception or birth sex ratio is theoretically expected.

If we assume an expected 50:50 birth sex ratio, namely, that a male or a female has a probability of half, it becomes easy to calculate the probability or chance of getting all males or all females in a litter or family of any size.

Thus it is apparent that, even though litters or families are large, some should occur, on the basis of chance alone, in which all the offspring are males or all are females.

Even though mammalian sperms are of two types and are produced in equal numbers and even though sex is determined at the time of fertilization, there is ample reason to believe that birth sex ratios may deviate from those expected according to the laws of chance. In fact there is reliable evidence that they deviate from the theoretically expected 50:50 sex ratio. For example, in every human population of fairly large size, significantly more males than females are born (United States population 48.4 per cent females: 51.6 per cent males). The explanations for such deviations are undoubtedly numerous. Some of the observed deviations are likely due to some differential effect on the two kinds of sperms prior to fertilization. Other deviations are known to be due to a differential survival on the part of male and female embryos during early stages of uterogestation.

Probabilities for Families Ranging from 1 to 10 Offspring

Litter or Family Size	Probability of All Males or of All Females Among Offspring
1	$(1/2)^1 = 1/2$ or 1 out of every 2 such families
2	$(1/2)^2 = 1/4$ or 1 out of every 4 such families
3	$(1/2)^3 = 1/8$ or 1 out of every 8 such families
4	$(1/2)^4 = 1/16$ or 1 out of every 16 such families
5	$(1/2)^5 = 1/32$ or 1 out of every 32 such families
6	$(1/2)^6 = 1/64$ or 1 out of every 64 such families
7	$(1/2)^7 = 1/128$ or 1 out of every 128 such families
8	$(1/2)^8 = 1/256$ or 1 out of every 256 such families
9	$(1/2)^9 = 1/512$ or 1 out of every 512 such families
10	$(1/2)^{10} = 1/1,024$ or 1 out of every 1,024 such families

The age of mammalian parents, which is the specific factor questioned, has been shown to be a probable explanation for some deviations. For example, the age of the female parent is known to affect the number of abortions or stillbirths, and usually this means a differential survival of males and females in utero. The age of the father has not been shown clearly to be responsible for a deviation from a 50:50 birth sex ratio, but seemingly it could be. It could presumably affect differentially the survival or fertilizing capacity of the X-carrying sperms and Y-carrying sperms and hence affect the conception sex ratio or even the early uterine sex ratio.

Although age of mammalian parents may possibly affect birth sex ratios, it seems probable that the two instances cited for the domestic pig are to be explained solely on the basis of chance. Two occurrences are not sufficient evidence to warrant recourse to any causal explanation. However, if the two cited are only two of a whole series of similar occurrences, as the author implies, some consideration of parental age would have to be taken. Certainly observations of the type indicated are worthy of tabulation and analysis. Sometimes observations of this type lead to new and important points of view.

INSULIN AND GAIN IN WEIGHT

To the Editor:—I saw a case of apparent anorexia nervosa in a white woman aged 25 who had previously been a psychoneurotic patient in a general hospital. She was extremely nervous, had lost weight, had ideas of persecution and fought with her neighbors. Her weight was 90 pounds (40.8 Kg.). She said she had never weighed over 100 pounds (45.4 Kg.). After thirty days of treatment, which included high caloric diet, iron, vitamins, folic acid, liver and psychotherapy, she continued to lose weight and became more of a problem to her family. I gave her 5 units of regular insulin forty-five minutes before each meal, and increased the dose by increments of 5 units up to 20 units three times a day. In two weeks she was taking 20 units without signs of shock following meals. One week after being on the 20 unit dose she was feeling much better, had no ideas of persecution and had gained 5 pounds (2.3 Kg.), but she noticed some tightness of her ankles and feet. Three weeks after receiving 20 units of regular insulin three times a day her feet and ankles were swollen so that she could not wear her shoes, but she was feeling wonderful and the urine did not show albumin or casts. Insulin was discontinued, and within three days her edema was gone. Can regular innsulin given to a nondiabetic person cause water retention and edema of the feet and ankles.

M. B. Sell, M.D., Augusta, Ga.

ANSWER.—Because of the hypoglycemic effect of insulin undoubtedly the appetite of the patient increased, she took more food, presumably more carbohydrate, protein, fat and, incidentally, more salt. Until she had the insulin her insufficient diet must have been relatively high in endogenous protein and fat and low in carbohydrate and salt. As long ago as 1769 William Stark (cited by Lusk, G.: The Science of the Elements of Nutrition, ed. 4, Philadelphia, W. B. Saunders, 1928, p. 354) called attention to the extraordinary gain in weight which followed the ingestion of a carbohydrate diet when he noticed that the weight of a patient rose "8 pounds (3.6 Kg.) in five days after changing his dietary from meat to flour." Zuntz (*Biochem. Ztschr.* **44**: 290, 1912) experimentally demonstrated this point, and it was confirmed by experiment at the Nutrition Laboratory of the Carnegie Institution of Washington (Carnegie Pub. no. 176, 1912, p. 93). The experiment at the Carnegie Laboratory between April 16 and 19, 1904, showed that on a carbohydrate diet the patient gained in weight 61 Gm. per day and on a fat diet his average loss for the following three days was 914 Gm. It was estimated that water stored each day during the carbohydrate period was plus 165 Gm. and the water lost each day in the fat period was 906 Gm.

Presumably the extra food, especially carbohydrate, would not account for all the weight gain of the patient. Some of it may have been due to the salt which was taken with the diet, just as the gain in weight with von Noorden's "oatmeal cure" of diabetes was not due to the oatmeal alone, but rather to the large quantity of salt added in its preparation (10+ Gm.) and contained in the half pound of butter which was taken with it (6.3 Gm.), which caused the weight to increase 4.5 Kg. during one or two days.

It is of interest that coincidentally with insulin therapy the spell of anorexia was broken, weight increased and the psychoneurotic symptoms of the patient vanished.

PARKINSONISM

To the Editor:—A man, 51 years of age, was stricken with Parkinson's disease about two years ago. The disease progressed rapidly and now seems to be in the advanced stages. The patient has exaggerated reflexes, extreme weakness, dizziness, trouble maintaining his balance when walking or standing and mask-like expression but no tremors. His appetite has been excellent, and he has not lost weight. Roentgenograms do not reveal tumor, and his serologic reactions of the blood are negative. I assume that his trouble is due to arteriosclerosis. Occasionally he feels fine for several hours, but then his weakened state returns. Serologic reactions of the spinal fluid are negative. Can anything be done? The patient is becoming depressed. He has had all routine methods of treatment with no effect. He has had blood studies, basal metabolism tests, electrocardiogram and roentgenograms and all are normal.

Charles H. Baldwin, M.D., Atlantic City, N. J.

ANSWER.—The therapeutic regimen of moderately advanced parkinsonism consists of medicinal agents, physical therapy and simple psychotherapy. In addition to the alkaloids, such as stramonium, hyoscine, atropine and others of this group, used alone or in combination, diphenhydramine hydrochloride, panparnit® (diethylaminoethyl-1-phenylcyclopentane-1-carboxylate hydrochloride) and trihexyphenidyl have been found useful. Artane is a new synthetic, antispasmodic agent which relieves parkinsonism as much as, or more than, the belladonna alkaloids, and it has the advantage that it produces fewer side reactions. Physical therapy consists of the proper combination of heat, massage and exercises, active and passive, administered under the supervision of a physician trained in physical medicine. Simple reassurance and a continued interest in the patient's daily problems will be of considerable help in maintaining morale and keeping the patient active for a longer period than would be otherwise possible.

BCG VACCINATION

To the Editor:—I have read in recent reports that in some persons who previously had BCG vaccination a primary type of tuberculosis eventually developed. Please explain how a person previously sensitized, giving a positive tuberculin reaction, is able to react like an unsensitized person.

Pedro D. Martinez, M.D., México, D.F., Mexico.

ANSWER.—As a general rule a well established primary tuberculous infection causes complete sensitization of all the tissues of the body, so that there will be a fixation of the bacilli at the site of the localization in the lungs when a new infection occurs. Consequently there will be no lymph node complex. As a result of a small infection, however, the sensitization of the tissues may sometimes be so slight that the bacilli do not become fixed; they may proceed to the lymph nodes and produce varying degrees of lymph node involvement. The result is sometimes indistinguishable from a true primary complex. If any sensitization has existed, however, such phenomena would be technically a "reinfection complex." Without an older calcified tubercle or evidence of previously positive tuberculin reaction, such "complexes" cannot be differentiated from a true primary complex. It is entirely possible, therefore, for persons who have had BCG vaccination to experience "reinfection complexes" because of an incomplete sensitization.

PIERCING EARS FOR EARRINGS

To the Editor:—I have been requested to pierce ears for earrings. Kindly inform me of the accepted methods, and also include such information as the exact anatomic location, type of anesthesia, size and type of needle and type of suture material to be used. Should the suture material be moved daily to prevent sticking? Should the earrings be put in immediately after the suture material has been removed? How long should the earrings remain in the ears before removal?

M.D., New Jersey.

ANSWER.—Ear lobules may be pierced with local anesthesia after the site of puncture is marked. The location of this point will have to be determined by one's esthetic sense, which may vary with the size of the lobule, shape of the ear, design of the earrings and height of the patient. A simple method of piercing employs a piece of sterile stainless steel wire which may be twisted into position as soon as it is inserted. This may be replaced with the earrings in ten days to two weeks. Any type of suture material is likely to predispose to infection; should this occur during treatment, antibiotic therapy should be instituted. Any local infection is likely to predispose to keloid formation. Either the stainless steel wire or the metal earring should be kept in place until the tract is completely epithelialized.

GLUCOSE SOLUTIONS MIXED WITH BLOOD

To the Editor:—Is there any evidence to support the opinion that dextrose solutions, even though isotonic, should not be mixed with blood or directly precede or follow blood in a transfusion? Some workers believe that the mixing of dextrose with blood or giving it through the same tube predisposes to a reaction.

M.D., New York.

ANSWER.—Isotonic dextrose solution can be mixed with blood, or the dextrose solution can be administered before or after transfusions. When dextrose is added to blood, the concentration must be isotonic, or hemolysis might be produced. Dextrose solutions occasionally produce reactions, but, as far as is known, there is not an increased tendency to such reaction when they are given in conjunction with whole blood.

EFFECT OF ALCOHOL ON INSULIN

To the Editor:—If the interior of an insulin syringe is wet with alcohol, what effect will that have on insulin?

S. Richard Horio, M.D., Honolulu, Hawaii.

ANSWER.—Alcohol in considerable amounts might affect the action of insulin. However, if an attempt is made to force all alcohol out of the syringe and then to dry the interior by simply pushing the plunger back and forth, the amount of alcohol which remains will be too little to have any effect on the action of insulin.

PRURITUS IN DERMATITIS VENENATA

To the Editor:—Are the antihistaminic drugs of any value in relieving the pruritus which occurs in dermatitis venenata?

David L. Cooper, M.D., Erie, Pa.

ANSWER.—Opinion is divided in regard to the value of antihistaminic drugs in relieving the itching of dermatitis venenata. Most experienced observers have expressed the belief that the results are less than favorable and that what little benefit is derived from their use is due to the sedative effect of the drugs.